

Applied Optics

A monthly publication of the
Optical Society of America

John N. Howard Editor

P. R. Wakeling Editorial Consultant

INDEX TO VOLUME 9 1970

Subject	2828
Author	2857

Names of people and companies occurring in filler photograph captions have not been included in this index.

Published monthly for the Optical Society of America by the American Institute of Physics, at 20th and Northampton Streets, Easton, Pa. 18042. Office of the Editor: AFCRL, Bedford, Mass. 01730: 617-861-4281. Office of the Editorial Consultant: WINC, 1613 Nineteenth Street, N.W., Washington, D.C. 20009; 202-387-1773. Advertising office: American Institute of Physics, 335 E. 45th Street, New York, N.Y. 10017; 212-MU 5-1940. Subscription rates per year; \$12.00 to OSA members; non-members and libraries \$24.00. Single copies \$3.00; complete volumes \$30.00. Second class postage paid at Easton, Pa. © Copyright 1970 by the Optical Society of America, Inc.

1970 Feature Editors:

January	A. Van Valkenberg	June	D. G. Rea
February	F. W. Paul	August	H. H. Blau, Jr.
March	B. J. Howell	September	H. W. Yates
April	B. J. Thompson	October	J. P. Wittke
May	F. W. Paul	November	A. B. Meinel
		December	L. Larmore

Subject Index to Volume 9*

Key to Index Use

1. Subjects, not titles, have been indexed.
2. Principal subjects are given in boldface type. Cross-referenced subjects that should be considered for more thorough coverage are given in lightface type after the principal subject.
3. (L), (MR), (N), (B), (P) indicate: (L) Letter to the Editor; (MR) meeting report; (N) from notes in one of the departments and not in a regular article; (B) book or book review; (P) patent. (E), (T), (T/E) indicate the article is experimental, theoretical, or both; (R) indicates a review article.

Aberrations

- Analysis and correction of secondary color in optical systems (E), 853
- Analysis by double wire testing (T/E), 1720 (L)
- Coefficients and unusual coordinates for specifying rays (T), 828
- Effect, in degenerate optical cavities (T), 1192

Absorption

- Apparatus for analysis, 172 (P)
- Cell, White-type multiple-pass (T/E), 2397 (L)
- Coefficients for CO₂ bands in the 961-cm⁻¹ and 1061-cm⁻¹ regions (E), 223 (L)
- Dichroic, of M centers as basis for optical information storage (E), 1163
- Multilayer control (T), 863
- Nonlinear optics, optical limiter, 2210 (P)
- Solar, and thermal emissivity of aluminum coated with silicon oxide films (E), 339
- Technique for measuring OH concentrations in shock tubes (E), 329
- Thermal by thin film optical cavity (E), 2111

Acetonitrile

- Single crystal, polarized infrared spectra at high pressures (E), 17

Acoustics

- Atmospheric remote sensing (R), 1976
- Disturbances detected by laser optical hydrophone, 1505 (P)
- Lens, traveling-wave, for optical scanner (T/E), 2154
- Scanner for bending light beam, 2405 (P)
- Surface wave visualization in Fabry-Perot interferometer (E), 2805 (L)

Adsorption

- Photoelectric techniques for studying aluminum-oxygen and aluminum-water systems (E), 79

Aeronautic Optics

- OSA Technical Group meeting report, 7 April 1970, 2014 (MR)
- Research at Ames Research Center (R), 245

Aerosols

- Atmospheric, method for predicting scattering coefficients in the infrared (T), 1337
- Atmospheric, polarization of light scattered by (T), 1122
- Comparative studies of extinction and backscattering at 10.6 μ and 0.63 μ (E/T), 1563

- Fog droplet size distribution evolution by laser scattering (E), 2517
- Infrared emission (T/E), 2000
- Particles, index of refraction influence on size determination with light scattering counters (T/E), 1930 (L); (T), 1931 (L)
- Polydisperse, settling, second and higher order light scattering (E/T), 2362
- Settling, extinction, and forward scattering (E/T), 2372
- Thermal emission from haze and clouds (T), 413
- Vertical attenuation and meteorological range (T/E), 1804
- Wavelength dependence of atmospheric extinction (E), 2539

Airborne Observations

- NASA optical program (E), 265

Airglow

- Brightness, spectroscopy in near infrared (E), 1610
- Studies, high luminosity spectrometer (E), 1225 (L)

Air Pollution

- Spectrometer detection of SO₂ and NO₂, balloon-borne, 128 (N)

Albedo

- Simulation instrument for astronomical bodies, 1255 (P)

Alignment

- Convex mirror, 1255 (P)
- Off-axis parabolic mirror, 1959 (P)
- Precise, of optical receiver with laser beam, 2405 (P)

Amplifier

- Light, 2210 (P)

Angles

- Interferometric measurement (T), 1630

Angular Rate Sensor

- Diffraction grating, 720 (P)

Apertures

- Synthesis using independent telescopes (T), 2501
- Synthesis with pupil coating (T), 2489

Apodization

- Screen, effect on rectangular and triangular wave response of circular aperture with incoherent light (T), 129

Applied Optics

- Publication problems, 83 (N); 663 (N); June All (N); July All (N); Nov. All
- References in articles, form, 83 (N); July All (N)

Arcs

- Hg + THl with variable mercury loading (T), 2711

Lamps

- Reflector design (T), 1702
- Spectral radiance of rubidium and cesium between 0.42 μ and 1.1 μ (E/T), 913
- Magneto-hydrodynamic (E), 494 (L)

Astronomy

- Image orthicon evaluation for (E), 2172
- Jantar Mantar Observatory, 1260 (N)

Atomic Collisions

- International conference, MIT, 729 (MR)

Atmosphere

- High altitude vapor release daytime tracking optical instrumentation (E), 2666

* Compiled by Franklin S. Harris, Jr.

Ozone absorption in 9-10- μ region from balloon-borne spectrometer (E/T), 565
 Phase effects at 10.6 μ compensation (E), 701
 Polarization of the radiation reflected and transmitted by earth's (T), 1122
 Probing with calibrated laser system (E/T), 1821
 Radiation, 1242 (B)
 Sensing by optical, radio and acoustic radar techniques (R), 1976
 Solar irradiance measurements (E), 774 (L)
 Temperature
 Absorbing gas profiles by spectral and angular radiance measurements (E/T), 1993
 Gradient, remote detection by infrared (E/T), 1789
 Satellite SIRS experiment (T/E), 1761
 Terrestrial, tables of light trajectories in, 1734 (B)
 Transmission of radiation from hot H₂O and CO₂ through cool intervening (T/E), 2792 (L)
 Vertical attenuation and meteorological range (T/E), 1804
 Water vapor measurement from satellite (SIRS experiment) (T/E), 1761

Atmospheric Optics

Halo of 22° by refraction in hexagonal ice crystals, 1788 (N)
 Infrared horizon profile of the earth (E), 903
 Interferometric approach to measurement of optical polarization (T/E), 1075
 Lidar uses (R), 1782
 Multiple scattering calculations in a plane parallel Mie atmosphere by modified Fourier transform method (T), 1457
 Perturbations minimized by fiber optic energy device, 1962 (P)
 Scattering coefficients in the infrared prediction for aerosols (T), 1337
 Scattering intensity and polarization plane-parallel atmosphere containing monodispersed water spheres (T), 2673
 Wavelength dependence of atmospheric extinction (E), 2539

Atmospheric Physics

Estonian Soviet Socialist Republic, 1242 (B)

Atmospheric Probing

Optical, radio and acoustic radar techniques (R), 1976

Attenuated Total Reflection

Use in infrared spectra of rubber compounds, 72 (N)

Attenuation

Line shape and (T), 1488 (L)
 Wavelength dependence of atmospheric extinction (E), 2539

Attitude Determination

Space vehicle, two approaches to the star mapping problem (T/E), 351

Automobiles

Headlamp aiming, 784 (P)

Axicons

System properties for collecting foil-excited beam spectra (E/T), 53

Backscattering

Aerosols, fog and rain at 10.6 μ and 0.63 μ (E/T), 1563

Balloons

Scientific symposium, AFCRL at Wentworth, 2407 (MR)
 Spectrometer observation of ozone absorption in 9-10- μ region (E/T), 565

Beam Splitters

Carbon dioxide laser, time variations of reflectance (E), 224 (L)
 Color selection, polarizing, 2211 (P)
 Differential direction changing device, 980 (P)
 Light sampling apparatus, 1505 (P)
 Reduction of polarization effects in (T) 866
 Variable, for lasers (E/T), 1726 (L)
 Variable transmittance (E), 970
 Wide-band pellicle, for interferometry, 1254 (P)

Beams

Bender-bimorph scanner analysis (T), 933
 Differential direction changing device, 980 (P)
 Direction changing apparatus, 983 (P)
 Electrooptical deflection apparatus, 1954 (P)
 Focusing and deflection by cylindrical mirror (T/E) 2377
 Gaussian
 Focused, on-axis irradiance (T), 2179 (L)
 Propagation characteristics (T), 1854
 Turbulent media (T), 125
 Self-focusing, theory of periodic (T), 1486 (L)
 Shaping reflector design (T), 1702

Becquerel, A.E.

Biographical note, 475 (N)

Beryllium

Mirrors, thermal dimensional instabilities (E), 2691
 Preparation of optical surfaces on (E), 539

Biology

Engineering in, conference, Washington, D.C., 1264 (N)

Birefringence

Strain analysis modulator, 2210 (P)
 Stress gradient, for retardation wedge, 2403 (P)
 Use in fly's eye lens, 2403 (P)

Bitter, Francis

Selected papers and commentaries, 1243 (B)

Blackbody

Cavity radiometer, 2404 (P)
 Directional emittance measurement instrument (E), 1920
 Furnace, inexpensive copper-point, 71 (N)
 Isothermal radiation source (E), 2023
 Normal emittance of circular cylindrical cavities (T), 2569
 Radiation, absolute measurement, 1744 (P)

Blood Monitor

Drug content by absorption, 1255 (P)

Bolometers

Infrared detector, 2208 (P)
 Thermistor, circuits, 2208 (P)
 Thin-film capacitive (E/T), 307

Books Reviewed

Atmospheric Physics in the Estonian Soviet Socialist Republic. Edited by L. Reeves. Reviewed by John N. Howard, 1242
Concepts in Physics. By Robert K. Adair. Reviewed by Robert T. Lagemann, 338
Correlation of Infrared and Raman Spectra of Organic Compounds. By Herman A. Szymanski. Reviewed by W. O. George, 874
Crystal Structure, Vol. 6. The Structure of Benzene Derivatives, Part 1: Molecules Containing One Benzene Ring, Second Edition. By Ralph W. G. Wyckoff. Reviewed by Donald Voet, 2614

- Design of Optical Spectrometers.* By J. F. James and R. S. Sternberg. Reviewed by T. K. McCubbin, Jr., 338
- Detection and Measurement of Infrared Radiation.* By R. A. Smith, F. E. Jones and R. P. Chasmar. Reviewed by A. Vaško, 48
- Developments in Applied Spectroscopy.* Edited by E. L. Grove and A. J. Perkins. Reviewed by G. A. Osborne, 1501
- Einführung in die Technik der Holographie.* By H. Kiemle and D. Röss. Reviewed by Winston E. Kock, 2205
- Electron Optics.* By B. Paszkowski. Reviewed by D. L. Lampert, 40
- Elementary Wave Optics.* By Robert H. Webb. Reviewed by J. W. Goodman, 1244
- Exploding Wires.* Edited by W. G. Chace and H. K. Moore. Reviewed by J. L. Bombach, 15
- Focal Encyclopedia of Photography* (Revised Desk Edition). Reviewed by James A. Eyer, 34
- Francis Bitter, Selected Papers and Commentaries.* Edited by T. Erber and C. M. Fowler. Reviewed by Charles P. Bean, 1243
- Gas Laser Technology.* By Douglas C. Sinclair and W. Earl Bell. Reviewed by William C. Eppers, Jr., 1963
- Handbook on the Construction of Optical-Mechanical Instruments.* By M. Ya. Kruger, V. A. Panov, V. V. Kulagin, G. V. Pogarev, Ya. M. Kruger, and A. M. Levinson. Reviewed by Joseph Mudar, 338
- High Pressure Methods in Solid State Research.* By C. C. Bradley. Reviewed by C. E. Weir, 15
- Holographie.* By M. Françon. Reviewed by Winston E. Kock, 1503
- Intermediate Quantum Mechanics.* By Hans A. Bethe. Reviewed by Kenneth Piech, 1501
- Introduction to Fourier Optics.* By Joseph W. Goodman. Reviewed by Richard E. Haskell, 22
- Introduction to Mass Spectrometry.* By J. Roboz. Reviewed by P. F. Knewstubb, 34
- Introduction to Nonlinear Optics.* By G. C. Baldwin. Reviewed by A. M. Glass, 16
- Introductory Group Theory and its Application to Molecular Structure.* By J. R. Ferraro and J. S. Ziomek. Reviewed by Robin M. Hochstrasser, 1734
- Invention of the Meteorological Instruments.* By W. E. K. Middleton. Reviewed by Robert T. Ryan, 1760
- Laser Kinetics.* By V. S. Mashkevich. Reviewed by Peter O. Clark, 1244
- Lasers and Holography.* By Winston E. Kock. Reviewed by John N. Howard, 1733
- Light Scattering Spectra of Solids.* By George B. Wright. Reviewed by Folke Stenman, 1733
- Lord Rayleigh, the man and his work.* By R. B. Lindsay. Reviewed by John N. Howard, 2613
- Luminescence of Biopolymers and Cells.* By G. M. Barenboim, A. N. Domanskii, and K. K. Turoveroy. Translation editor Raymond F. Chen. Reviewed by G. H. Beaven, 1965
- Microscope Past and Present.* By S. Bradbury. Reviewed by George G. Cocks, 33
- Microwave Spectral Tables.* By Mariam S. Cord, Jean D. Petersen, Matthew S. Lojko, and Rudolph H. Haas. Reviewed by Manfred Winnewisser, 469
- Molecular Processes on Solid Surfaces.* By E. Drauglis, R. D. Gretz, and R. I. Jaffee. Reviewed by Darrel H. Reneker, 469
- Non-Dispersive Infra-Red Gas Analysis in Science, Medicine and Industry.* By D. W. Hill and T. Powell. Reviewed by J. Janáček, 1242
- Optical Pumping and Atomic Line Shape.* By T. Skalinski, Editor. Reviewed by John N. Howard, 1733
- Organic Magnetic Resonance,* International Journal. Editor-in-Chief E. F. Mooney. Reviewed by T. A. Craff, 1963
- Proceedings of the Fifth International Congress on X-Ray Optics and Microanalysis, Tübingen, 1968.* Edited by G. Möllenstedt and K. H. Gaukler. Reviewed by H. S. Lipson, 2207
- Proceedings of the Fourth International Vacuum Congress.* Arranged by the Joint British Committee for Vacuum Science and Technology. Reviewed by D. B. McKenney, 1247
- Phase-Space Dynamics of Particles.* By A. Lichtenberg. Reviewed by William Quirk, 1500
- Plasma Spectroscopy.* By G. V. Marr. Reviewed by J. R. Greig, 874
- Progress in Optics.* Vol. 7. Edited by Emil Wolf. Reviewed by W. T. Welford, 1244
- Photographic Action of Ionizing Radiations.* By R. H. Herz. Reviewed by C. M. Dozier, 1245
- Photometric Standards and the Unit of Light.* By O. C. Jones and J. S. Preston. Reviewed by L. E. Barbrow, 1245
- Physics of Color Centers.* By W. Beall Fowler. Reviewed by P. P. Feofilov, 1240
- Principles of Holography.* By Howard M. Smith. Reviewed by Richard E. Haskell, 22
- Quantum Electronics.* By V. M. Fain and Ya. I. Khanin. Vol. 1, Basic Theory, Vol. 2, Maser Amplifiers and Oscillators. Reviewed by Andrew Dienes, 2206
- Radiation in the Atmosphere.* Edited by L. Reeves. Reviewed by John N. Howard, 1242
- Scattering of Light and Other Electromagnetic Radiation.* By Milton Kerker. Reviewed by D. Deirmendjian, 2206
- Science of Moiré Patterns.* By Gerald Oster. Reviewed by John N. Howard, 1963
- Spectra and Energy Levels of Rare Earth Ions in Crystals.* By G. H. Diecke. Reviewed by P. P. Feofilov, 1241
- Systems and Transforms with Applications in Optics.* By Athanasios Papoulis. Reviewed by George A. Vanasse, 16
- Tables of Light Trajectories in the Terrestrial Atmosphere.* By F. Link and L. Neuzil. Reviewed by John N. Howard, 1734
- Theory of X-Ray and Thermal Neutron Scattering by Real Crystals.* By M. A. Krivoglaз. Reviewed by V. Kandarpa, 1241
- Thin-Film Optical Filters.* By H. A. Macleod. Reviewed by J. A. Dobrowolski, 2206
- Thin Film Phenomena.* By Kasturi L. Chopra. Reviewed by R. E. Joynson, 15
- Vision and Its Disorders.* NINDB Monograph 4. Reviewed by A. Pirie, 39
- X-Ray Spectrochemical Analysis.* Second Edition. By L. S. Birks. Reviewed by D. M. McKenney, 2613

Brillouin Scattering

Energy conversion and utilization, 984 (P)

Bromine

Laser Raman spectra of liquid and solid, under high pressure (E), 11

Bumstead, H. A.

Biographical Note, 1418 (N)

Calcite

High pressure transitions (E), 1

Calcium Tungstate

Light conversion efficiency, using a light intensifier tube (T/E), 1403

Calorimetry

- Technique for infrared absorption measurements in crystals (E), 1936 (L)

Cameras

- Color separation, 1507 (P)
- Compact astronomical, of three hyperboloidal mirrors, 214 (P)
- Compact, folded optical system, 1739 (P)
- Exposure control, 171 (P)
- Film flatness measurement using Moiré fringes (T/E), 2802 (L)
- Image dissection, 784 (P)
- Motion picture, zoom telescopic finder, 160 (P)
- Oceanographic radiance distribution (T/E), 2015
- Panoramic, 982 (P)
- Pinhole, multiple, 764 (P)
- Reproduce color signal on monochromatic film, 1962 (P)
- Stereoscopic, 1962 (P)
- Time-lapse photographic (E), 1811

Carbon Dioxide

- Bands in the 961-cm^{-1} and 1061-cm^{-1} regions intensity measurements (E), 223 (L)
- Temperature dependence of the self-broadened half-width of the P-20 line in the 001-100 band (E), 1230 (L)

Carbon Disulfide

- Laser Raman spectra of liquid and solid, under high pressure (E), 11

Carbon Lamp

- Intense line source at 1931 Å for photochemistry (E), 1711 (L)

Carbon Monoxide

- Detected in instellar space, 2410 (N)

Cassegrain

- Catadioptric high-speed optical system, 160 (P)

Cathode Ray Tubes

- Dual phosphor for higher efficiency, 172 (P)
- Lighthouse intensity exposure, 160 (P)

Cathodochromics

- Image displays (E), 2243
- Recording materials (E), 2236

Cells

- Absorption, calibration, infrared, 2409 (P)
- Absorption, White-type, multiple-pass (T/E), 2397 (L)
- Biological, classification by fluorescent response, 2211 (P)
- Gas transfer, variable temperature (8-400 K) for solid state spectroscopy, 777 (L)
- Optical, for long pathlengths at low temperatures (E), 222 (L)

Ceramics

- Transparent ferroelectric, 2409 (N)

Cesium Vapor Arc Lamps

- Spectral radiance between 0.42 μ and 1.1 μ as function of power input and pressure (E/T), 913

Chemiluminescence

- Display use, 764 (P)
- Emergency lighting device, 1255 (P)

Choppers

- Fourier spectrum of bivariate normal intensity distribution (T/E), 381

- Polarization beam (E), 2396 (L)
- Optical, for reflectance measurements, 2404 (P)

Character Recognition

- Man-made vs natural objects, 2211 (P)

Chromatography

- Gas-liquid, book, 72 (N)

Cinematography

- Image dissection system, 784 (P)

Clouds

- High-altitude, infrared reflectance (E), 561
- Laser nephelometer for physics study (E), 1798
- Stereophotographs, 1509 (P)
- Thermal emission from (T), 413
- Time-lapse photography (E), 1817
- Time-lapse photography from high-altitude balloons (E), 1814

Coatings

- Interference, reduction of polarization effects in (T), 866

Coherence

- Image contrast dependence on the position of the phase ring in a phase contrast object (T), 1879
- Lens fourier transform computer response to extended sources (T/E), 2554
- Low spatial frequency enhancement with optical aperture tapering (E), 1902
- Optical effects from thermally induced mirror deformation (T), 2028
- Optical systems resolution testing using linear gratings (E/T), 2746
- Partially, mixed fields with gaussian irradiance profiles, optimization criteria (T), 115
- Review of concept, 2414
- Theory use in rough surface light scattering (T), 2470

Color

- Background, and source spectral energy in object pleasantness (R), 1513
- Camera to reproduce, on monochromatic film, 1962 (P)
- Display system, 984 (P)
- Modulator system, 980 (P)
- Technology, summer program at Rensselaer Polytechnic Institute, 1262 (N)

Color Centers

- Holographic recording on electron beam colored sodium chloride crystals (E), 1658
- Light modulation device use, 978 (P)
- Physics of, 1240 (B)

Colorimetry

- In Hungary (E), 973 (L)
- Liquid sample analysis, 1741 (P)

Compensators

- Generalized Savart plate, 2403 (P)
- Variable wedge birefringent (E), 1220 (L)
- Wedge by stress birefringence, 2403 (P)

Computers

- Analysis of images in pattern recognition (E), 2453
- Applications of digital image processing (R,E), 289
- Inexpensive on-line for optical spectroscopy (E), 2183 (L)
- Movies of buildup of laser oscillations (T), 2423

Optical read-write mass memory (E), 2269
 Perspective drawing (T), 1223 (L)
 Photochromic logic system, 1507 (L)
 Simulator, star mapping problem for space vehicle attitude determination (T/E), 351

Condenser Optics

Anamorphic, for slitless spectrograph (E), 49

Cooling

Radiant, for infrared detectors (T/E), 185

Cornea

Burns, thermal response to carbon dioxide laser (T), 665
 Hydrophilic contact lense with insert, 2209 (P)

Corner Cube

Derivation of properties of the optical center (T), 974 (L)

Corona

E, interferometry (E), 2635
 Electron, optical system for photography (E), 2620
 Forbidden line study with electronic cameras during eclipse of 7 March 1970 (E), 2643
 K, color (E), 2631
 Solar, eclipse instrumentation (E), 2626
 Solar, polarization measurement system (E), 2648

Coronagraph

Catadioptric design (T), 1131

Correlation Techniques

Matrix multiplication by optical analogy methods (T), 2161

Correlators

Optical delay line, improved read-in technique (E/T), 135
 Optical device, 2819 (P)
 Optical, partially coherent, 764 (P)

Coupler

Birefringent Fabry-Perot etalon, 1959 (P)

Crystals

Birefringent, growth from melt, holographic interferometry of (E/T), 1834
 Cubic and noncubic, new photoelastic dispersion technique (E), 155
 Infrared, how to select booklet, 134 (N)
 Infrared absorption by calorimeter (E), 1936 (L)
 Liquid
 Cholesteric, visual observation of rf magnetic fields (E), 2795 (L)
 Display, 2336 (N)
 Electronically scanned analog display (E), 1323
 Real-time visual reconstruction of infrared holograms (E), 499 (L)
 Mixed, high pressure dependences of phonons (T/E), 5
 Optical properties book, 72 (N)
 Real, theory of x-ray and thermal neutron scattering, 1241 (B)
 Structure, benzene derivatives, 2613 (B)
 Structure study institute, Parma, 1013 (N)

Data Processing

Coherent, systems, resolution testing using linear gratings (E/T), 2746
 Digital recording, aspects of multiple beam interference techniques (E/T), 2753
 Film nonlinearities use in optical spatial filtering (T/E), 215

Holographic storage, spatially randomized data masks (E/T), 2587 (L)
 Linear vector operations in coherent optical systems (E/T), 687
 On-line acquisition of data from Raman and infrared spectrometers with time-sharing computer (E), 1615
 Optical read-write holographic memory (T), 2271
 Photographic film digital data in diffraction grating patterns, 2404 (P)

Deflectors

Acoustic light scanner and display system, 2405 (P)
 Acoustooptical, phase-modulated, efficiency (T), 506 (L)
 Beam
 Electrooptical apparatus, 1954 (P); 2820 (P); 2822 (P)
 Laser, 1256 (P)
 Light, 2210 (P); 2820 (P)
 Use of LiNbO₃ or LiTaO₃, 2210 (P)
 Cells, equalization of acoustooptic, in laser color TV system (E/T), 1176
 Electrooptic prism apparatus, 783 (P)
 Light, achromatic, 2211 (P)
 Light beam, steering device, 2210 (P)
 Multiple passage, light beam system, 2209 (P)
 Piezoelectric laser beam, 752 (P)
 Polychromatic beam, 1255 (P)
 Radiation beam device, 350 (P)
 Total internal reflection, 2820 (P)

Delay Lines

Correlators, optical, improved read-in technique (E/T), 135

Densitometry

Comparison of, and TV waveform analysis of observed landscape patterns on radar (E), 749

Detectors

Fluorescent, for laser pulses, 2208 (P)
 High-energy for pulsed lasers (E), 2392 (L)
 Improved system for directing energy into, 1962 (P)
 Infrared
 Bolometer, 2208 (P)
 Calculation of average and mean square flux densities (T), 2578 (L)
 Comparison of low and high impedance (T), 2441
 Ferroelectric, 2208 (P)
 Radiation scanner for fine detail in image, 2404 (P)
 Optical device for energy conversion into bulk material (R), 1959
 Passive radiant cooling (T/E), 185
 Pyroelectric, 2208 (P)
 Relative sensitivity of InSb and HgCdTe in real-time scanning infrared camera (E/T), 1941 (L)
 TGS operated in pyroelectric mode (E), 1940 (L)
 Ultraviolet, silicon photodiode, 2208 (P)

Diaphragm

Annular, expandable, 760 (P)
 Iris, fully closing, 980 (P)

Dichroism

Circular, measurement, 2403 (P)

Diffraction

Annular aperture, calculation of enriched energy (T), 1874
 Apodizing of screen effect on rectangular and triangular wave response of a circular aperture with incoherent incident light (T), 129
 Array of square openings (E/T), 2341

Effects on field of view of an optical instrument (T), 1862
 Filters in extreme ultraviolet spectroscopy (T/E), 447
 Image contrast dependence on the position of a phase ring on a phase contrast object (T), 1879
 Images of a general periodic rectangular wave object in a polarizing microscope with crossed polarizers (T), 1379
 Limited pupil converted to arbitrarily large size by pupil coating (T), 2489
 Narrow slit aperture field in a conducting plane (T), 235 (L)
 On-axis irradiance of focused apertured gaussian beam (T), 2179 (L)
 Scattering by two Rayleigh-Debye spheres (T), 429
 Single-strip, comparison between Kirchhoff and Keller's geometrical theory in the limit of small glancing angle and width (T), 1691

Diffraction Grating

Angular rate sensor, 720 (P)
 Intensifying property of a pile-of-gratings (T/E), 59
 Rotating, optical frequency shifting by means of (E), 649
 Use in strain detection, 783 (P)

Diffuser

Etched glass for nonlinearly scattered light (E), 2177 (L)

Displacements

Measurement down to 10^{-3} Å with two-mode laser (E), 645

Displays

Acoustic light scanner and laser, 2405 (P)
 Airborne multiple beam sensors, 770 (P)
 Electrochromic cells, 764 (P)
 Electronically scanned analog liquid crystal (E), 1323
 Photochromic system using laser, 2821 (P)
 Schlieren light valve of television (E/T), 2225
 Three-dimensional, 2405 (P)
 Variable reflectance device, 2821 (P)

Doppler Effect

Bandwidth of rotating and translating cylinder using unfocused 10.6-μ radiation (E), 2788 (L)
 Image, infrared flying-spot telescope use, (T/E), 2505
 Laser detection systems for gas velocity measurement (E/T), 1026
 Signal-to-noise ratio and spectral broadening in turbulence structure measurement using a cw laser (E/T), 633

Double Refraction

Mechanical stress produced to study dispersion in cubic and noncubic crystals (E), 155

Drawings

Optical, preparation (T/E), 527; 2598 (L); 2599 (L); 2599 (L)

Droplets

Sauter mean diameter measurement (E), 2007

Duochromator

Improved, for measurement of small spectral line shifts (E), 494 (L)
 Polarization Fabry-Perot (E), 1137

Earth

Infrared emission measured by Nimbus III (E), 1767
 Picture by ATS III Spin-Scan camera, 2220 (N)
 Surfaces, anisotropic reflectance characteristics (E), 403

Echelle

Efficiency measurements in the ultraviolet (E), 1227 (L)

Eclipse

Color photographs on cover, 2625
 Coronal lines, 7 March 1970 studies with electronic camera (E), 2643
 Early, 2822 (N)
 Infrared telescope, computer controlled (E), 2653
 Instrumentation for the solar corona (E), 2626
 Old and new (R), 2617
 Photon counting during (E), 2650
 Pseudo-random binary sequences for multiple codes use (E/T), 2658
 Solar corona polarization recording system (E), 2648
 Solar radio emission, 7 March 1970, 2665 (N)

Ecology

Holographic movies for (E), 2187 (L)

Education

Associate in applied science technician, problems and solutions, 895
 Coblenz Society clinic in advanced infrared techniques, 2218 (N)
 Colorado State University, graduate curriculum in remote sensing, 2218 (N)
 Imperial College, London, course in applied optics, 1258 (N)
 Lasers and holography, proposed film, 2205 (N)
 Lasers and laser applications, summer school, Haifa, 796 (N)
 Massachusetts Institute of Technology
 Image enhancement course, 1258 (N)
 Infrared spectroscopy summer program, 1336 (N)
 Optical communications course, 1472 (N)
 Northwestern University, light scattering summer school, 1265 (N)
 PMC Colleges senior projects, 2204 (N)
 Physics doctoral production in New York state, 999 (N)
 Rensselaer Polytechnic Institute
 Advanced color measurements, 1262 (N)
 Color technology for management, 1262 (N)
 Principles of color technology course, 1262 (N)
 Rochester Institute of Technology, research in photographic science instrumentation; biophotographer training, 1000 (N)
 Science and engineering, doctoral supply and utilization report, 1494 (N)
 University of Arizona, Optical Sciences Center, 2413; 2606 (N)
 University of Rhode Island Center, photoelectric imaging devices, 2205 (N)
 University of Rochester, Institute of Optics, contemporary optics course, 977 (N)

Electrooptical Effects

Q-switching performance in lithium niobate and KD*P Pockel's cells (E), 1939 (L)

Electrodes

Explosive anode erosion in high current sparks (E), 1695

Electroluminescence

Devices, prospects for visible radiation, 2406 (MR)

Electron Density

Kerr-cell-shuttered f/1.5 stigmatic spectrograph for nano-second exposure (E), 259

Electron Emission

Image orthicon photocathode stability (E), 1719 (L)

Electron Impact

Spectrometer for chemical analysis of gases and vapors (E), 2148

Electron Multiplier

Operation of proposed multichannel spectral recording instrument (T), 503 (L)

Electron Optics

Book, 40 (B)
Optics and, competitive and complementary technologies in electronics (R,T), 2294

Electron Probe Analysis

Conference, New York City, 1267 (N)

Electronic Collisions

Conference, MIT, 1729 (MR)

Electronics Research Center

Optics at (R), 335

Electrooptics

Automatic testing of systems (E), 2298
Cesium cupric chloride optical properties (E/T), 2794 (L)
Cubic crystal light modulator, 770 (P)
Multiple iris raster, 760 (P)
Prism beam deflector, 783 (P)

Electrophotography

Conference proceedings, 384 (N)
Process using electrophotolytic reactions, 349 (P)
Recording apparatus, 1743 (P)
Symposium, IEEE, New York, 1952 (MR)

Ellipsometry

Alignment methods for the polarizer and analyzer (E), 1489 (L)
Application of intensity transients in (T/E), 1634
Azimuthal misalignment and surface anisotropy as sources of error (T/E), 1868
Rhomb-type quarterwave retarders, evaluation (T), 2123

Emission

Infrared by fine water aerosols and fog (T/E), 2000
Nanolight discharge static model (T), 1698
Thermal by thin film optical cavity (E), 2111

Emissivity

Reflectance nomenclature and direction reflectance and (T), 1474 (L)
Solar absorptivity and thermal, silicon oxide coated aluminum (E), 339

Emittance

Normal, of circular cylindrical cavities (T), 2569
Total hemispherical of germanium and silicon at low temperature (E), 1222 (L)

Encoder

Analog to digital, linear, 1962 (P)

Enlargers

High-speed color, with integrating spheres, 2209 (P)

Environmental Sciences

Institute, annual meeting, Boston, 1732 (MR)

Errata, 1253, 1697, 1943, 1947**Etalons**

Passive, interferometric techniques for measuring dimensional stability (E), 743

Evaporation Systems

Elliptical tank, with vertical base and cover plates (E), 2801 (L)

Exobiology

Mars exploration and, 1269

Exploding Wires

Book, 15

Extinction

Backscattering and, by aerosols, fog and rain at 10.6 μ and 0.63 μ (E/T), 1563
In settling aerosols (R/T), 2372

Eyes

Corneal thermal response to the carbon dioxide laser (T), 665
Motion indicator, 1255 (P)
Protection by photochromic fluids, 2209 (P)
Protective glasses using photochromatism, 1507 (P)

Eyepieces

Wide-angle, 983 (P)

Fabry-Perot

Etalons and multielement grid filters in a dielectric (T/E), 2350
Reflectors design for the vacuum ultraviolet (T), 35

Facsimile Transmitter

System, 1743 (P)

Faraday Effect

Modulator, 1509 (P)
Rotator, 1509 (P)
Rotator, TEM mode, 350 (P)

Ferroelectricity

In photoconductive device for phase holograms (T/E), 2279

Fiber Optics

Applications and technology, SPIE seminar-in-depth, Dallas, 1731 (MR)
Coupling device, 770 (P)
Image transmission device, 2209 (P)
Integrating cube scattering detector (E), 2706
Lighting device, 770 (P)
Modulator, 980 (P)
Optical junction, 764 (P)
Oximeter probe use, 784 (P)
Photochromic switch, 2209 (P)
Scanner for navigation, 980 (P)
Terminal assembly for light-conducting cable, 2404 (P)
Utilization in energy directing device to minimize atmospheric perturbations, 1962 (P)
Viewer for aircraft pilot, 980 (P)
Viewer for gunnery practice, 980 (P)

Field of View

Diffraction effect on (T), 1862

Films

Analytical and experimental study of nonlinearities in hologram recording (T/E), 721, 1947
Estimation of refractive indices by a spectrophotometric method (E), 501 (L)
Flatness measurement using Moiré topography (T/E) 2802 (L)

Glass of arsenic-sulfur, optically formed dielectric gratings (E), 1712 (L)
 Holographic, characteristics (E), 815
 Magnetic, in holography (T/E), 2275
 Threshold modulation curves for photographic (E/T), 875

Filters

Christiansen, with narrow absorption band particles, 783 (P)
 Diffraction, in extreme ultraviolet spectroscopy (T/E), 447
 Etalon, tunable, modulation with, 1442 (N)
 For 20-33 μ , 1256 (P)
 Infrared
 Far, multielement grids in a dielectric (T/E), 2350
 For 3.39- μ He-Ne laser (E), 2191 (L)
 Interference
 Passband, design and use with wide-angle lenses for multi-spectral photography (T), 2435
 Reduction of polarization effects in (T), 866
 Temperature control of the bandpass (E/T), 2305
 Variable metal mesh coupler for far infrared lasers (E), 2511
 Gas analysis with pressure broadening of gas being detected, 2405 (P)
 Narrow-band, based on magneto-optical effects (T), 1253
 Optical, multilayer, analysis using signal flow graph techniques (T), 2119
 Optical restoration of images blurred by atmospheric turbulence using optimum theory (E/T), 167
 Phase, generation of periodic amplitude (E), 2585 (L)
 Photographic density, 2209 (P)
 Radiation gate for spectrometers, 350 (P)
 Thin films, optical, 2206 (B)
 Ultraviolet, designed for OI 1300- \AA triplet detection (E), 1492 (L)
 Variable wavelength, 214 (P)

Flow

Velocity measurement with laser heterodyning, 783 (P)

Fluorescence

Scanning of cytological material, 2211 (P)
 X-ray analysis, 980 (P)

Focus

Automatic apparatus, 760 (P)
 Automatic camera, 979 (P); 980 (P)
 Microfilm, 979 (P)
 Automatic projector, 978 (P)
 Detector for focusing a laser on a target (E), 113
 Focal plane determining device, 2821 (P)

Fogs

Droplet size distribution evolution by laser scattering (E), 2517
 Extinction and backscattering by, at 10.6 μ and 0.63 μ (E/T), 1563
 Infrared emission (T/E), 2000

Fourier

Optics, introduction, 22 (B)
 Spectroscopy
 Conference, Aspen, 2212 (MR)
 Far infrared airborne (E), 439
 Infrared eclipse telescope, computer-controlled (E), 2653
 Lamellar grating for infrared spectrophotometer (E), 2582 (L)
 Nimbus III Michelson interferometer (E), 1767
 Small, high-speed interferometer for aircraft, balloon and spacecraft (E), 301

Transforms

Applications to optics, 16 (B)
 Cameras, hologram system, velocity synchronized (E/T), 1105
 Demonstration Fourier scope (E), 1721 (L)
 Finite, whose function is asymptotic to Dirac delta function (T), 2489
 Hologram generated by computer (T/E), 639
 Holograms of data mask recording by use of random phase mask (E/T), 695
 Modified method for multiple scattering calculations in a plane parallel Mie atmosphere (T), 1457
 Modulated, photography use, 1509 (P)
 Optical convolution of time functions (T/E), 1672
 Optical restoration of images blurred by atmospheric turbulence using optimum filter theory (E/T), 167
 Spectroscopy for infrared transmittance of wire grids (E/T), 2341
 System design and evaluation using lens response to extended sources (T/E), 2554

Fresnel Zone Plates

Kinoform lenses (T/E), 1883

From the Editor, 83, 244, 663, April A11, May A11, June A11, July A11, August A11, Sept. A11, Oct. A11, Nov. A11, Dec. A11

Furnaces

Spectroscopic studies (E), 1606

Gases

Absorption analysis with spectrum pressure broadening of gas being detected, 2405 (P)
 Analysis by infrared, 349 (P); 1741 (P)
 Infrared monitoring system, 978 (P)
 Vibrational and rotational spectra by electron-impact spectrometer (E), 2148

Geometrical Optics

Aberration coefficients and unusual coordinates for specifying rays (T), 828
 Anamorphic condensing optics for slitless spectrograph (E), 49
 Degenerate optics cavities aberration effects (T), 1192
 Focusing and deflection of optical beams by cylindrical mirrors (T/E), 2377
 Focusing through a flat plate, dependence of aberration on the refractive index (T), 2800 (L)
 Mangin-mirror color corrected, 1962 (P)
 Normalization of the Delano diagram (T), 2485
 Perspective drawing by computer (T), 1233 (L)
 Simplified derivation of the properties of the optical center of a corner cube (T), 974 (L)

Germanium

Mercury-doped, infrared radiation detectors, heterodyne performance (E), 1848
 Photodiode with extended long wavelength response (E/T), 1842
 Total hemispherical emittance at low temperature (E), 1222 (L)

Glare

Veiling, reduction in optical instruments by lens elements of absorbing glass (T), 510 (L); 2388 (L)

Glass

Ceramic mirror, evaluation of a large blank (E), 938
 Electrooptical development, 1256 (P)

Etched, for diffusion of nonlinearly scattered light (E), 2172 (L)
 Light guidance in, symposium, Philadelphia, 276 (N)
 Optical, selection for superachromats (T), 1665; 2390 (L)
 Refractive index of Corning 9025 (E), 1477 (L)
 Technology of defects, 2220 (N)
 Viscosity-temperature relations in, 2220 (N)

Goddard Space Flight Center

Optics at (R), 1003

Granularity

Photographic, measurement of diffuse RMS (E), 871

Graphics

Computer generated holography (E/T), 471

Gratings

Dielectric, optically formed in thick films of arsenic-sulfur glass (E), 1712 (L)
 Diffraction
 Double-pass Ebert monochromator, observation of pseudo-half orders (T/E) 1475 (L)
 Handbook, 2220 (N)
 Echelle, high dispersion stellar spectroscopy (E), 2332
 Lamellar, for infrared spectrophotometers (E), 2582 (L)
 Laminary, photoetched for use in the far infrared (E), 1229 (L)
 Linear, use in testing coherent optical systems (E/T), 2746
 Mirror and, optical properties of a system (T), 459
 Phase, 2210 (P)
 Wavelength selectors and reflector use in laser (E/T), 1825

Group Theory

Introductory, and its application to molecular structure, 1734 (B)

Guidance

Spacecraft by laser device, 1255 (P)

Haze

Thermal emission (T), 413

Heat

Total from sea, airborne radiometric measurement (E/T) 2697

Heterodyning

Detection of rotating and translating cylinder using unfocused 10.6- μ radiation (E), 2788 (L)
 Detection with extrinsic photoconductive infrared radiation detectors (E), 1848
 Laser use for flow velocity measurement, 783 (P)
 Measurement of length shifts down to 10^{-3} Å with a two-mode laser (E), 645
 Mixing partially coherent fields with Gaussian irradiance profiles, optimization criteria (T), 115
 Ring laser with back coupling eliminated, 1961 (P)
 Spatial filtering properties of the reference beam in optical (T), 1159
 Theory of optical, detection using the pyroelectric effect (T), 161
 Tracking system, 2405 (P)

High Frequency

Generation and amplification devices and applications conference, Cornell, 2168 (N)

History

Biographical notes
 Becquerel, A. E., 475 (N)
 Bumstead, H. A., 1418 (N)

Lorentz, H. A., 1735 (N)
 Magnus, H. G., 667 (N)
 Perrin, J. B., 1368 (N)
 Rankine, W. J. M., 700 (N)
 Tyndall, John, 1391 (N)
 Institute of Optics, University of Rochester, 789

Holography

Acoustical

Formation with a frequency shifted reference beam (E/T), 1375

Symposium, Newport Beach, 652 (N)

Applications symposium, Besançon, 446 (N)

Atmospheric phase effects compensation at 10.6 μ (E), 701

Bandwidth reduction (E/T), 1946 (L)

Beam reduction for movies (E), 2187 (L)

Beat-frequency generated, 760 (P)

Bleached

Measurements of the stability of, photographic phase holograms (E), 1363

Procedure improvements (E), 1948 (L)

Book, 1503 (B)

Color system, 752 (P)

Computers and, 1498 (MR)

Computer generated

Binary, minimization of reconstruction errors (T/E), 1180

Lee's method simplified (T), 1949 (L), 2813 (L)

New approach (E/T), 471

Displays, wide-angle production technique (E), 91

Double exposure interferograms, maximum contrast (E), 2717

Dual real images of transparent objects (E), 1216 (L)

Far field, use of short-cut edge trace for edge smear calculation (T), 496 (L)

Fourier transform

Random phase mask for recording of data masks (E/T), 695

Sampled, generated by computer (T/E), 639

Velocity synchronized, camera system (E/T), 1105

Fraunhofer, for velocimetry applications (E/T), 2073

Full-view system (E), 1479 (L)

Ghost images analysis by use of Chebyshev polynomials (T/E), 1369

Gratings, dielectric

Optically formed, in thick films of arsenic-sulfur glass (E), 1712 (L)

Theory and practice (E/T), 713

Hypervelocity projectile recording technique with front surface resolution (T), 1040

Incoherent, variable magnification in (T/E), 231 (L)

Ideographic composing machine (E), 2291

Image compensation from thin diffuser, 2821 (P)

Image intensification by hologram superposition (E), 2588 (L)

Infrared, real-time visual reconstruction (E), 499 (L)

Interferometry

Birefringent crystal growth from the melt (E/T), 1834

Both beams traversing the object (E/T), 2810 (L)

Desensitized (E), 2098

High-speed (E), 1215 (L)

Holo-diagram for information retrieval (T/E), 97

Prediction of fringe pattern (T/E), 2311

Static meniscus application (E/T), 1639

Transparent objects with phase grating illumination (E/T), 2321

Lasers and, 1733 (B)

Lasers and, 8-mm film loops, 997 (N)

Local reference beam generation, 349 (P)

Low-noise, improved efficiency production techniques (E), 1643; 2590 (L)

- Magnetic (T/E), 2275
- Matrix multiplication by optical methods (T), 2161
- Mechanism of formation in dichromated gelatin (E), 1651
- Mode selection in a pulse transmission mode ruby system (E), 1723 (L)
- Motion measurement (E/T), 2066
- Motion pictures for television playback (E), 2283
- Multiple-beam interference techniques digital data recording, aspects of (E/T), 2753
- Nondestructive testing, optimizing pulsed lasers in (E), 1724 (L)
- Ophthalmoscope use, 784 (P)
- Optics for read-write memory (T), 2271
- OSA Technical Group meeting report, 1039 (N)
- Particle size measurement, 760 (P)
- Phase
- Determination of, vibrating objects (E/T), 1357
 - Ferroelectric photoconductor device (T/E), 2279
 - Kinoforms, phase-only and (T), 1478 (L)
- Photographic emulsion shrinkage correction (E), 238 (L)
- Photoresist as a recording medium (E), 2720
- Pile-of-gratings intensifying property (T/E), 59
- Polarization effects in (E/T), 2394 (L)
- Principles, 22 (B)
- Pulsed argon-ion lasers operating in various transverse modes (E/T), 107
- Pulsed laser techniques for people (E), 815
- Real-time measurements by optical correlation (T/E), 1385
- Reconstructed image undesired light caused by photographic process nonlinearity (T/E), 810
- Recording
- Analytical and experimental study of nonlinearities (T/E), 721, 1947
 - Electron beam colored sodium chloride crystals (E), 1658
 - System, 2209 (P)
- Reflected-light pulsed-laser system experiments (E), 103
- Scanned-beam (E/T), 709
- Section profiling by interference fringe illumination (E), 2158 (L)
- Seminar, U.S.-Japan, Washington, D.C., 1496 (MR)
- Silhouette, without vertical parallax (E), 2812 (L)
- Spherical pump beam upconversion analogy (T), 2266
- Storage, spatially randomized data masks (E/T), 2587 (L)
- Subsonic flow visualization (E/T), 2059
- Symposium, Besançon, 123 (N)
- System for large time-bandwidth product multichannel spectral analysis (T), 229 (L)
- Techniques, 2205 (B)
- Testing glasses (E), 822
- Thermal imaging, novel means (E), 761
- Thermoplastic, write-read-erase *in situ* optical memory (E), 2089
- Thick absorption recording media (E), 201
- Three-dimensional
- Display of x-ray images (E), 775 (L)
 - Front-lighted movie (E), 498 (L)
 - Picture projection, 2404 (P)
- Torsion observation in cylindrical shaft (E/T), 2093
- Total system, rapid check on stability and coherence (E), 1481 (L)
- Twin image suppression by nonlinear techniques (T/E), 2813 (L)
- Ultraviolet recorded in dichromated gelatin (E), 2186 (L)
- Use in mapping problem for space vehicle attitude determination (T/E), 351
- Use of film nonlinearities in optical spatial filtering (T/E), 215
- Vibration cycles stored by scanning technique (E), 1216
- Wavefront multiplexing (E/T), 1218 (L)
- Horizon Sensor**
- Infrared tracking, 1962 (P)
 - Radiation type, 1961 (P)
 - Reflective telescope optics, 764 (P)
- Hungary**
- Colorimetry (E), 973 (L)
- Ideographic Composing Machine**
- Development status (E), 2291
- Illumination**
- Office copier, 979 (P)
 - Optical antidazzling device, 720 (P)
- Image Amplifier**
- System, 1509 (B)
- Image Analysis**
- Automatic, seminar, Chicago, 2215 (N)
- Image Converter**
- Infrared, schlieren system, 770 (P)
 - Semiconductor, infrared to visible light, 1955 (P)
- Image Detector**
- Energetic particles or γ -quanta with fiber optics delay for multichannel counting (T), 2193 (L)
 - Proposed multichannel spectral recording instrument, comments (T), 503 (L)
- Image Displays**
- Cathodochromic (E), 2243
- Image Dissection**
- Conversion at nonvisible wavelengths and (T/E), 765
- Image Enhancement**
- Course, MIT, 1258 (N)
- Image Evaluation**
- Threshold modulation curves for photographic films (E/T), 875
- Image Formation**
- Arbitrarily perfect with extrapolating pupil by coating (T), 2489
 - Optical communications system, 982 (P)
 - Variable magnification in incoherent holography (T/E), 231 (L)
- Image Intensifiers**
- By superposition of halograms (E), 2588 (L)
 - Electrooptic, 784 (P)
 - Pile-of-gratings intensifying property (T/E), 59
 - Solid state components in, 985 (P)
 - Tube use as light shutter, 783 (P)
- Image Orthicon**
- Astronomical application evaluation (E), 2172
- Image Processing Systems**
- Code translation filter, 2821 (P); 2821 (P)
 - Digital, applications (R, E), 289
 - Digital, course, San Diego, 1910 (N)
 - Digital deflector, 2822 (P)
 - Laser with material transfer recording (E/T), 2260

- Linear vector operations in coherent optical (E/T), 687
 Noncoherent analog (E/T), 2459
 Spatial filtering, 2821 (P)
- Image Restoration**
 Optical, blurred by atmospheric turbulence using optimum filter theory (E/T), 167
- Image Rotation**
 Device, 764 (P)
- Image Storage**
 Photoconductive materials in silanes, 764 (P)
- Image Transmission**
 Light-pipe system, 2405 (P)
- Image Upconversion**
 Planar and spherical pump beam use (T), 2266
- Images**
 Assessment by computer discrimination (E), 2453
- Imaging System**
 Low light level technique (R), 2230
- Index of Refraction**
 Distributions in cylindrical, graded-index glass rods used as image relays (T), 753
 Effect on aerosol particle determination by light scattering counters (T/E), 1930 (L); (T), 1931 (L)
 Estimation by a spectrophotometric method (E), 501 (L)
 Fluids, interferometer measurement, 760 (P)
 Interferometer measurement of optical density variations, 2404 (P)
 Maxwell Garnett indices for thin metal films (T), 2579 (L)
 Measurement of gradients in solutions, 770 (P)
 Measurement of unpolished sample on Abbe refractometer (E), 2586 (L)
- Information Processing**
 Matrix multiplication by optical methods (T), 2161
 OSA Technical Group meeting report, 1039 (N)
 Partially coherent optical correlator, 764 (P)
 Photoluminescent ink use, 980 (P)
 Read-in improved technique for optical delay line correlators (E/T), 135
 Two-dimensional image transmission, 982 (P)
- Information Retrieval**
 Computer based, services extended, 1737 (N)
 Computer readable tape records of input, American Institute of Physics, 1259 (N)
 Scientific information dissemination centers, 1259 (N)
- Information Storage**
 Optical, dichroic absorption of M centers as basis (E), 1163
 Phase holograms in a ferroelectric photoconductor device (T/E), 2279
- Information Theory**
 Hadamard-transform image scanning (T), 1392
 International symposium, Noordwijk, 2610 (MR)
- Infrared**
 Absorption in crystals by calorimeter (E), 1936 (L)
 Atmospheric aerosol scattering coefficients prediction (T), 1337
 Atmospheric band model parameters for long path ozone in 9-10- μ region (T), 2600 (L)
- Average and mean square flux density calculation (T), 2578 (L)
 Beam splitters for carbon dioxide laser, measure time variations of reflectance (E), 224 (L)
 Bolometer detector, 2208 (P)
 Clear air turbulence remote detection (E/T), 1789
 Detector
 Comparison of low- and high-impedance (T), 2441
 Ferroelectric, 2208 (P)
 Mercury-doped germanium heterodyne performance (E), 1848
 Diseased tree detection, 72 (N)
 Doped semiconductor, 2405 (P)
 Earth emission measured from Nimbus III (E), 1767
 Earth horizon profile (E), 903
 Emission by fine water aerosols and fog (T/E), 2000
 Far
 Airborne spectroscopy (E), 439
 Multielement grid filters in a dielectric (T/E), 2350
 Photoetched laminary gratings (E), 1229 (L)
 Ferroelectric image translator, 1509 (P)
 Filters
 For 3.39- μ He-Ne laser (E), 2191 (L)
 For 20-33 μ , 1256 (P)
 Gas analyzer
 Instrument, 349 (P); 1741 (P)
 Non-dispersive, in science, medicine and industry, 1242 (B)
 Holograms real-time visual reconstruction (E), 499 (L)
 Integrating hemiellipsoid fabrication and evaluation (E/T), 483
 Interferometry carbon dioxide laser and liquid crystal detector (E), 1319
 Lasers, variable metal mesh coupler (E), 2511
 Materials optical working (E), 675
 Microsampling techniques booklet, 134 (N)
 Microscope, scanned laser (E), 802
 Optical coatings at 10.6 μ highly reflecting reflectance measurements (E), 85
 Optical constants of plant leaves (E/T), 2573
 Passive detector cooling (T/E), 185
 Photography, thermal imaging (E), 761
 Pyroelectric detector, 2208 (P)
 Radiation detection and measurement, 48 (B)
 Radiometer data, Nimbus high resolution color enhancement (E), 681
 Reflectance of high altitude clouds (E), 561
 Scanning camera comparison of InSb and HgCdTe (E), 1941 (L)
 Solar irradiance at 11.58 km altitude (E), 345
 Source circuit modification, Cary instrument (E), 2585 (L)
 Spectra
 Electronic emission of nitrogen (E/T), 195
 Organic compounds, 874 (B)
 Spectrometers
 Far (E), 617
 Mid and far, vacuum grating (E), 23
 On-line acquisition of data with time-sharing computer (E), 1615
 Performance, for measuring earth's radiance near 4.3 μ (E), 924
 Spectrophotometer lamellar grating (E), 2582 (L)
 Spectroscopy
 High pressure, polarized spectra of single crystals of acetonitrile (E), 17
 Summer program, MIT, 1336 (N)
 Surface contamination detection, 985 (P)
 Techniques, advanced clinic, Coblentz Society, New Orleans, 2218 (N)

Telescope

- Flying-spot (T/E), 2505
- For eclipse, computer controlled (E), 2653
- Thermometers, *in situ* calibration (T), 513 (L); 941 (L)
- Thickness measurement of epitaxially grown silicon layers (T/E), 2381
- Transmission of far infrared polarized radiation through metal light pipes (E/T), 971 (L)
- Vapor monitoring system, 978 (P)
- Visibility by encapsulated liquid crystals, 147 (N)
- Water content in paper measurement, 1741 (P)
- Wire grids, optical properties (E/T), 2341

Institute of Optics, University of Rochester

- Graduates activities (R), 787
- History, 789

Instrumentation

- Aerospace, books, 1494 (N)

Integrated Circuits

- Bond evaluation by laser-assisted infrared scanning technique (E), 669

Integrating Spheres

- Fluorescent, for the vacuum ultraviolet (T/E), 451
- Hemiellipsoid, fabrication and properties (E/T), 483
- Measurement of absorption coefficient of materials (T/E), 2140

Interference

- Equal slope contours from moiré fringes (T/E), 2804 (L)
- Filters, optical, for adjustment of spectral response and spectral power distribution (E), 1396
- Fringes prediction in holography (T/E), 2311
- White-light, demonstration on two spaced parallel zone plates (E), 1722 (L)

Interferometers

- Comparative thickness measuring, 1254 (P)
- Confocal Fabry-Perot, alignment requirements for mode matching (T/E), 2539
- Fizeau, fringe sharpening (E), 2053
- Fabry-Perot
 - Modified, 1254 (P)
 - Photoelectric, description and numerical results (T), 1591
 - Polarization duochromator (E), 1137
 - Technical operation bulletin, 1442 (N)
- Fluid index of refraction measurement, 760 (P)
- Infrared, method for large mirror oscillation (E), 512 (L)
- Laser, versatile (E), 2180 (L)
- Lloyd, higher-order (E), 1838
- Measurement of rapid displacement of moving surfaces, 1967 (N)
- Michelson, for use in measuring characteristics of phonograph cartridges (E), 1231 (L)
- Michelson, white light, object measuring system, 1959 (P)
- Multiple beam, mechanical design, 1254 (P)
- Parallelism of laser rod faces measurement (E), 1945 (L)
- Refractive index measurement, 985 (P)
- Reversing-front for phase correlation measurements in the turbulent atmosphere (E/T), 510 (L)
- Scanning spherical mirror, for carbon dioxide laser radiation analysis (E/T), 373
- Scanning two-beam, limiting fringe pointing precision (T/E), 1140
- Schlieren, laser grating system, 1256 (P)
- Shearing, compact, lateral based on Michelson (E), 1146
- Shearing, rugged, inexpensive (T/E), 948

- Small, high speed, for aircraft, balloon and spacecraft applications (E), 301
- Special, for testing long laser rods (E), 465
- Spectroscopy using a beat technique (T), 2182 (L)
- Testing and optical figuring (E), 1219 (L)
- Three-aperture, for optical density measurements, 2404 (P)
- Two-beam, object study, 764 (P)
- Ultraviolet, vacuum (T/E), 31
- Wave front shearing, 979 (P)

Interferometry

- Angles measurement (T), 1630
- Angular measurement extended to absolute accuracy better than 10^{-6} arc second, 1959 (P)
- Approach to measurement of optical polarization (T/E), 1075
- Aspherical surfaces testing with Newton fringes (E), 837
- Combinations of frequency-shifted mode-locked-laser pulses (T), 953
- Fabry-Perot profile deconvolution (T), 1213 (L)
- Holographic
 - Desensitize hologram (E), 2098
 - High-speed (E), 1215 (L)
 - Holo-diagram for information retrieval (T/E), 97
 - Measurement of general forms of motion (E/T), 2066
 - Observation of torsion in cylindrical shaft (E/T), 2093
 - Subsonic flow visualization (E/T), 2059
 - Transparent objects with phase grating illumination (E/T), 2321
- With both beams traversing the object (E/T), 2810 (L)
- Improved collimation test (E), 2590 (L)
- Infrared, with carbon dioxide laser source and liquid crystal detector (E) 1319
- Lamellar grating for infrared spectrophotometer (E), 2582 (L)
- Laser beam shaping for streak (T), 1213 (L)
- Long path difference, using simple gas laser (E), 2809 (L)
- Modified Michelson with reference path, 1957 (P)
- Moving mirror, light frequency shift for displacement measurement, 784 (P)
- Multiple, Fabry-Perot spectrometer, twelve channel (E), 2529
- Optical-path variation of transmitting objects instrument recorder (E/T), 1345
- Real-time measurements by optical correlation (T/E), 1385
- Ronchi test of aspherical surfaces (T), 1897
- Ronchigrams and (E), 1944 (L)
- Ronchigrams, quasi-, as mirror transitive images of shearing interferograms (E/T) 1477 (L)
- Scanning technique for allowing whole vibration cycles to be stored on one hologram (E), 1216 (L)
- Shearing, simple method for workshop testing of optics (T), 1623
- Simple, based on Ronchi test (E), 1943 (L)
- Solar E corona (E), 2635
- Spectral line, hook method (T), 737
- Spectroscopic, 1256 (P)
- Stability and coherence of total holographic system, rapid check (E), 1481 (L)
- Surface imperfections and Sparrow resolution limit (T), 2326
- Techniques for measuring dimensional stability of passive etalons (E), 743
- Test for plane mirrors (T), 840
- Two-wavelength technique, to measure change in density of specific atomic population (T), 737
- Window wavefront deformation as measure of angular deviation to a line of sight (E/T), 1097

International Commission for Optics

- Minutes of 8th conference, 14-19 July 1969 at Reading, 457

Iodine Laser

Neutral atomic (T/E), 359

Ion Beam

Figuring of rough glass surface (E), 173

Ionization Potential

Photoelectric spectroscopy with undispersed ultraviolet radiation (E), 605

Ionized Gases

Phenomena, conference, Bucharest, 1729 (MR)

Irradiance Solar

Measurements, comments on (E), 774 (L)

Isotopes

Dependence of gas laser profiles (T), 2428

User's guide, 1494 (N)

Jantar Mantar

Astronomical observatory, 1260 (N)

Jet Propulsion Laboratory

Applications of digital image processing (R, E), 289

Optics at (R), 271

Solar simulators at (E), 1068

Kerr Cell

Liquid purification, 980 (P)

Kerr Effect

Magneto-optic readout system, 1959 (P)

Modulator use, 982 (P)

Technique for observation and mapping of distorted high intensity electric fields, 1967 (N)

Lamps

Gas discharge illuminator for microscopes, 719 (P)

Germanium hollow cathode assembly, 2820 (P)

Hg + Tl, with variable mercury loading (T), 2711

Spherical cathode, 2404 (P)

Langley Research Center

Optics at (R), 317

Lasers

Absorption in saturable absorbers in excited state explanation using triple absorption model (T), 233 (L)

Alignment, with pentaprism (E), 1210 (L)

Applications and, meeting, Dresden, 2608 (MR)

Amplifier

Disk configuration, 1957 (P)

Multiple pass optical cell, 2820 (P)

Oscillator and, for 15-cm i.d. multipath CO₂, properties (E), 516 (L)

Applications

Holographic system for large time-bandwidth product multi-channel analysis (T), 229 (L)

Modulation transfer function of photographic materials evaluation using speckle pattern (E), 1482 (L)

Summer school, Haifa, 796 (N)

Argon-Ion

Holograms with pulsed, operating in various transverse modes (E/T), 107

Long-pulse operation (E), 2247

Beams

Photography by multiple beam technique (E), 1482 (L)

Shaping for streak interferometry (T), 1213 (L)

Splitter, variable (E/T), 1726 (L)

Bistable for optical switching, 1957 (P)

Brewster windows, optical loss and thermal distortion (T), 797

Calorimeter, 982 (P)

Carbon Dioxide

Amplifier and oscillator in multipath (E), 516 (L)

Corneal thermal response (T), 665

Lensing effect of plasma (T/E), 2725

Literature guide, 379 (N)

Low voltage excitation (E), 2737

Pulse repetition rate control and stabilization in passively Q-switched (E), 515 (L)

Pumping by a de-Tesla coil combination (E), 1485 (L)

Q-switch, constant dispersion rotating grating (E), 2808 (L)

Scanning spherical mirror interferometer for analysis of radiation (E/T), 373

Wavelength-selector grating end reflector use (E/T), 1825

Chelate

Liquid, Nd with α -dihalo-carboxylic acid, 1957 (P)

Room temperature liquid (M⁺Eu[BTF]₄⁻), 1955 (P)

Chemical, book, 62 (N)

Coherent light generation system, 764 (P)

Communication system, 1505 (P)

Conversion of sunlight into coherent beam, 2336 (N)

Developments and future production, 134 (N)

Device for multiple frequency outputs, 2820 (P)

Disk type, optical cladding, 2822 (P)

Displays, color TV system with acoustooptic deflection cells equalized (E/T), 1176

Doppler velocimeter

Detection system for gases (E/T), 1026

System (E), 2393 (L)

Dyes

Nitrogen laser pumping (E), 517 (L); (E), 1725 (L)

Transverse flow repetitive (E), 514 (L)

Tuned nitrogen pumped (E), 2742

Wavelength-selector grating end reflector (E/T), 1825

Electrooptical prism beam deflector, 783 (P)

Electrooptical Q-switch using lithium niobate, 2211 (P)

Emission area control, 784 (P)

Engineering and applications, meeting, Washington, D. C. 2534 (N)

Engineering applications symposium, Tel Aviv, 862 (N)

Etched glass diffuser for use with Fabry-Perot interferometer (E), 2177 (L)

Experiments performed with reflected-light pulsed-laser holography system (E), 103

Filament selection for lasing by polarization techniques, 1960 (P)

Flow velocity measurement use, 783 (P)

Focus detector as aid for, focusing on target (E), 113

Frequency selective, 752 (P)

Frequency shifting

Mode-locked pulses, interferometric combinations (T), 953

Rotating diffraction grating (E), 649

GaAlAs

Illuminator thermoelectrically cooled (E), 2249

Injector, high efficiency, high power (E), 2249

Intensity profile, isotope dependence on, Lamb theory extension (T), 2428

Use in long path difference interferometry (E), 2809 (L)

Gas

Excited by negative glow from cold cathode, 2211 (P)

Technology, 1963 (B)

Gaussian beam

Output converted to uniform amplitude distribution by lenses, 1738 (P)

Propagation characteristics (T), 1854

- German language journal, 1259 (N)
- Glass, with self-Q-switching by saturable absorption of color centers, 1959 (P)
- Gratings as wavelength-selective end reflectors (E/T), 1825
- HCN, plasma self-Q-switching in far infrared (E), 653
- He-Ne phase locked, for measurements of atmospheric phase jitter (E), 518 (L)
- High-energy detector for pulsed (E), 2392 (L)
- High power, amplification in divergent beam in a conical cavity (T), 225 (L)
- Holography
- Book, 1733 (B)
 - Film loops and, 997 (N)
 - Movies (E), 2187 (L)
- Image recording system with material transfer technique (E/T), 2260
- Industry Association, convention, Los Angeles, 437 (MR)
- Infrared, far, plasma self-Q-switching (E), 653
- Variable mesh coupler (E), 2511
- Infrared scanning technique for evaluating bonded connections in microcircuits (E), 669
- Interferometer, versatile (E), 2180 (L)
- Interaction with solids, study of homogenization and dispersion of induced stress waves (E), 227 (L)
- Iodine, neutral atomic (T/E), 359
- Simple sealed off TEM₀₀ ceramic tube (E), 2593 (L)
- Kinetics, 1244 (B)
- Lidar (R, T/E), 1782
- System calibration for atmospheric probing (E/T), 1820
 - System of SRI, 1797 (N)
- Light-amplifying structures, 160 (P); 160 (P)
- Light pipe, 2819 (P)
- Local oscillator reference tracking system, 2405 (P)
- Low spatial frequency signal enhancement with optical aperture tapering (E), 1902
- Metal vapor, simple high temperature system for cw (E), 1484 (L)
- Microscope, scanned infrared (E), 802
- Modes
- Controlled using quarterwave plates, 1959 (P)
 - Matching TEM₀₀ to obscured circular aperture, techniques (T/E), 1435
 - Selecting resonator, 1743 (P)
 - Selection by internal reflection prism, 1739 (P)
- Modulator
- High efficiency birefringent output coupler, 1959 (P)
 - Rotating diffraction grating to shift frequencies (E), 649
- Multiple internal reflecting prisms, 160 (P)
- Narrow beam use in atmospheric turbulence studies (T/E), 2543
- Neodymium YAG
- Beam quality (E), 1429
 - Fundamental mode analysis (T/E), 2053
 - Infrared fast sensitometry (E), 1481 (L)
 - Rod, thermal lensing (E/T), 2548
 - Stabilizing sleeve (E), 2190 (L)
- Nephelometer for cloud physics (E), 1798
- Nitrogen
- Pumping organic dyes (E), 517 (L)
 - Stimulated emission from organic dye solutions pumped by (E), 1725 (L)
- Noise and oscillations (T), 2423
- Optical effects on mirrors by thermal deformation (T), 2028
- Optical power limiter
- By plasma breakdown, 720 (P)
 - Using negative thermal lens, 752 (P)
- Optical processing of phase correlation induced by turbulent medium in beam (E/T), 962
- Oscillator with single transverse mode output, 1960 (P)
- Output control using ultrasonics, 983 (P)
- Photochromic display system use, 2821 (P)
- Photo-coagulation device, 1961 (P)
- Porro prism resonator for high-power applications, 1955 (P)
- Power and energy measurements seminar, NBS-Boulder, 1731 (MR)
- Power meter, thermocouple, analysis (T), 2594 (L)
- Pumping
- Broadband incoherent source, 770 (P)
 - Nuclear energy, using phosphor transducer, 1957 (P)
 - Optical, by rods in parallel, 1957 (P)
 - Semi-elliptical cavity, for efficient cooling, 1960 (P)
- Q-Switching
- Constant dispersion rotating grating for CO₂ (E), 2808 (L)
 - Device, 160 (P)
 - Improvement, 752 (P)
 - Solid-state, by applying acoustic energy directly to the laser rod, 752 (P)
 - Synchronization by spring mechanism, 1955 (P)
- Radiance increase apparatus, 752 (P)
- Raman spectra of liquid and solid bromine and carbon disulfide under high pressure (E), 11
- Random stack mirrors as broad-band reflector (E), 2040
- Reflective shutter, 770 (P)
- Research program of ARPA-NBS on laser materials, 2823 (N)
- Resonator, unstable optical, loss calculations using the Prony method (T), 2729
- Ring
- Back coupling, prevention by polarization device, 1961 (P)
 - Triangular, polarization properties with Brewster angle window and discharge tube (T/E), 1831
- Rods
- Long, special interferometer for testing (E), 465
 - Parallelism measurement by interferometry (E), 1945 (L)
 - Pump induced distortion (E), 1727 (E)
 - Thermal lenses in Nd:YAG (E/T), 2548
- Ruby
- Mode controlled Q-switched tunable (E), 1211 (L)
 - Mode selection in a pulse transmission mode, for holography (E), 1723 (L)
- Safety conference, Cincinnati, 2684 (N)
- Scanners, 1741 (P); 1743 (P); 2404 (P); 2819 (P)
- Infrared flying-spot telescope, design (T/E), 2505
- Scattering
- Angular patterns measurement use for individual spheres 7.5 μ to 110 μ diameter (E/T), 2522
 - For fog droplet size distribution evolution in fogs (E), 2517
- Semiconducting solid solutions, 2210 (P)
- Semiconductor light amplifier device, 984 (P)
- Shock-ionization pumped, 1954 (P)
- Silicate glass with rubidium or cesium and varying amounts of potassium, barium oxide and lead oxide, 1959 (P)
- Solid state resonator with moving cylindrical resonator for large energy storage and variable output, 1954 (P)
- Source for Raman spectrometer, design criteria (E), 1304
- Technology applications, 134 (N)
- Technology developments, SPIE seminar-in-depth, Rochester, 1238 (MR)
- Tracking and ranging system for lunar surface (T/E), 2256
- Tunable, continuous, 752 (P)
- Turbulence structure measurement, signal-to-noise ratio and spectral broadening (E/T), 633
- Two-mode, measurement of length shifts down to 10⁻³ Å (E), 645

Underwater acoustic disturbance detection, 1505 (P)
 Variable focal length for exit, 1255 (P)
 Velocity of ship determination, 784 (P)
 Welding of hollow brass pin with upper portion of beryllium, 2409 (N)
 White light (E), 1209 (L)

Leaves

Cotton, maturity, relation of light reflectance to histological and physical evaluations (T/E), 545

Lens Design

Aberration coefficients and unusual coordinates for specifying rays (T), 828
 Analysis and correction of secondary color in optical systems (E), 853
 Analysis of perturbed systems (T), 533
 Analysis of refractive index distributions in cylindrical, graded-index glass rods used as image relays (T), 753
 Family of optically compensated zoom lenses (T/E), 844
 Optical Society of America Technical Group meeting, April 1970, 2614 (N)
 Telescopes, tilted component (T), 2169
 Testing large Cassegrainian optical systems (T), 2497
 Tolerance sensitivity and optimization (T), 523
 Zoom lens with a large computer (E), 1443

Lens Testing

Device using crossed-cylinder lens, 1961 (P)
 Concentric telescopic meniscus for underwater lenses (T), 771

Lenses

Abridged lens and prism sets (E), 774 (L)
 Acoustic, traveling-wave optical scanner (T/E), 2154
 Anamorphic for perspective variation, 1509 (P)
 Automatic testing, 984 (P)
 Camera attachment, zoom, 783 (P)
 Conical, collection efficiency improvement (E), 2388 (L)
 Converts gaussian to uniform amplitude output distribution, 1738 (P)
 Copying, apochromatic symmetrical, wide-angle objective, 2210 (P)
 Corneal contact, series, aspherical, 1960 (P); 1960 (P)
 Drawings of, for optical elements (T/E), 527; 2598 (L); 2599 (L)
 Electrophotographic reproduction, of seven elements, 2208 (P)
 Eyepiece, wide-angle long-eye-relief, 985 (P)
 Fly's eye, birefringent device, 2403 (P)
 Fresnel annular zone objective (E), 2807 (L)
 Focal isolation (E/T), 477
 Gradient density glasses for night driving (T/E), 2176 (L)
 High aperture recording system with four lens elements, 172 (P)
 Kinoform thin lightweight (T/E), 1883
 Large-aperture, wide-angle zoom system, 1509 (P)
 Low chromatic aberration, 983 (P)
 Mangin-mirror color corrected, 1962 (P)
 Objective
 Double-Gauss, 1509 (P); 1962 (P)
 Five component, six element double Gauss, 1961 (P)
 Four component, 983 (P); 983 (P)
 Optically compensated varifocal, 172 (P)
 Photographic
 Continuously variable focal length, 983 (P)
 Copying, 172 (P)
 Four-component double Gauss, 1962 (P)
 Four-element, triplet, 983 (P)
 High-speed (f/0.75), 985 (P)

High-speed, two-aspherical surfaced, 214 (P)
 Plasmal-type, five-component, 2209 (P)
 Reversed telephoto, four-element, 1505 (P)
 Triplet-type, 172 (P)
 Varifocal, 1509 (P)
 Varifocal with four-element front lens group, 1961 (P)
 Wide-angle, or cinematographic, 2211 (P)
 Wide-angle, triplet, 171 (P)

Projection

Family of optically compensated zoom (T/E), 844
 Four-element triplet, 983 (P)
 Symmetrical, 172 (P)
 Response to extended sources (T/E), 2554
 Varifocal, 983 (P)
 Semi-objective, 100X magnification with field flattener, 2211 (P)
 Spectacle, plastic, bifocal, 1960 (P)
 Spherical, two-element variable power, 1743 (P)
 Superachromats, selection of optical glasses in (T), 1665, 2390 (L)
 Telephoto
 High definition, 1961 (P)
 Highly corrected, 214 (P)
 Short focal length and larger back focal length, 983 (P)
 Tolerances in manufacturing (T), 533
 Variable refractive null (T/E), 849
 Variance of wavefront aberrations (T), 533
 Varifocal, new class (T), 1669
 Varifocal 35-mm camera, 982 (P)
 Wide-angle modified symmetrical, 1509 (P)
 Wide-aperture, 1509 (P)
 Wide-aperture, four-component, 983 (P)
 Zoom
 Design of, with a large computer (E), 1443
 Family of optically compensated (T/E), 844
 Four-component, 1509 (P)

Lewis Research Center

Optics at (R), 399

Lidar

Probing of the atmosphere (R), 1976

Light

Guidance in glass, 276 (N)
 Low-level systems, seminar, 2212 (MR)

Light Amplifier

Photomultiplier tube and, compared for recording of Raman spectra (T), 502 (L)

Light Pipes

Metal, transmission of polarized far infrared radiation through (E/T), 971 (L)
 Optical image transmission, 2405 (P)

Light Trajectories

Terrestrial atmosphere tables, 1734 (B)

Light Valves

Schlieren for television projection (E/T), 2225
 Thin film, 2820 (P)

Lightning

Spectroscopy by photography (E), 1775

Line Shape

Atomic, optical pumping, 1733 (B)
 Attenuation and (T), 1488 (L)

Lithium Niobate

Three-layer broadband antireflection coatings (E/T), 1490 (L)

Lorentz, H. A.

Biographical note, 1735 (N)

Luminescence Spectra

Measurement apparatus with a digital recording system (E), 1312

Study using frequency response method of high speed spectrophotometry (E/T), 2762

Magnetism

Magnetic materials and, conference, Philadelphia, 1239 (MR)

Magnetooptics

Narrow band filters based on (T), 1253

Readout system, 1959 (P)

Magnus, H. G.

Biographical note, 667 (N)

Mariner Spacecraft

Star sensors (R, E), 1056

Mars

Exploration and exobiology, 1269

Gamma-ray spectroscopic measurements (E), 1289

Optics and the Mariner imaging instruments (E), 277

Organic compounds analysis (R), 1282

Picture of surface, 1374 (N)

Space photography and the exploration of (R), 1270

Surface features meeting, Huntington Beach, 1882 (N)

Marshall Space Flight Center

Optics at (R), 369

Materials

High temperature chemistry and physics, bibliography, 58 (N); 2408 (N)

Research symposium, electronic density of states, NBS, 976 (MR)

Measurement

Field strength, absolute, 72 (N)

Television systems for scientific (E/T), 2565

Meetings Calendar, 300, 594, 912, 1233, 1288, 1573, 1816, 2039, 2400, 2815

Meetings

AFCLR Scientific Balloon Symposium, 6th, Wentworth, 8-10 June, 1970, 2407

American Meteorological Society Symposium on the Dynamics of the Mesosphere and Lower Thermosphere, 15-18 June 1970, Boulder, 2609

Analytical Chemistry and Applied Spectroscopy, 21st Pittsburgh Conference, Cleveland, 1-6 March, 1970, 1500

Automatic Image Analysis Seminar, Chicago, 22 May, 1970, 2215

Chemistry and Spectroscopy, Pacific Conference, Anaheim, 6-10 October, 1969, 975

EUCHEM Conference on Low Frequency Vibrational Spectroscopy, Versailles, 3-5 September, 1969, 1951

Fourier Spectroscopy, International Conference on, Aspen, 16-20 March, 1970, 2212

Holography and the Computer, Conference, Houston, 10-12 December, 1969, 1498

IEEE International Convention, Electrography—Electronic Harcopy, Symposium, New York, 23 March, 1970, 1952

Information Theory, International Symposium, 15-19 June 1970, Noordwijk, The Netherlands, 2610

Institute of Environmental Sciences, 16th Annual Meeting, 12-16 April, 1970, Boston, 1732

Inter/Micro 1969, London, 9-11 September, 1969, 419

Inter/Micro 1970, 29 June-2 July 1970, Chicago, 2611

Laser Industry Association Convention, Los Angeles, 20-23 October, 1969, 437

Laser Power and Energy Measurements Seminar, NBS-Boulder, 4-5 December 1969, 1731

Lasers and Their Applications, International Meeting, 10-17 June 1970, Dresden, 2608

Magnetic Semiconductors, Symposium on, Yorktown Heights, 13-14 November, 1969, 438

Magnetism and Magnetic Materials, 15th Annual Conference, Philadelphia, 18-21 November 1969, 1239

Materials Research Symposium, 3rd, Electronic Density of States, National Bureau of Standards, 3-6 November, 1969, 976

Metrology Sessions at the 24th Annual ISA Conference, Houston, 27-30 October, 1969, 1497

Molecular Spectroscopy, 10th European Congress, Liège, 28 September-3 October 1969, 10

Nonlinear Optics Conference, Queen's University of Belfast, 8-12 September, 1969, 404

Optical Society of America, Annual Meeting, Chicago, 21-24 October, 1969, 543

Optical Society of America, Philadelphia, 7-10 April, 1970, 1950

Phenomena in Ionized Gases, 9th International Conference, Bucharest, 1-6 September, 1969, 1729

Photoelectron Spectroscopy, International Symposium, University of Tennessee, 14-15 May, 2407

Photoelectron Spectroscopy Session, 1969 Eastern Analytical Symposium, New York City, 19-21 November, 1969, 976

Physics and Nondestructive Testing, 9th Annual Symposium, Chicago, 22-25 September 1969, 10

Physics of Electronic and Atomic Collisions, 6th International Conference, Massachusetts Institute of Technology, 28 July-2 August, 1969, 1729

Planetary Atmospheres and Surfaces, Colloquium, Woods Hole, 11-15 August 1969, 403

Polytechnic Institute of Brooklyn Symposium on Submillimeter Waves, Brooklyn, 31 March-2 April, 1970, 2215

Prospects for Visible Radiation from Electro-luminescent Devices, Panel at the 3rd Solid State Devices Conference, Exeter, 16-19 September, 1969, 2406

Research and Development, Symposium, Zagreb International Fair, 11-21 September, 1969, 1237

Silicon Processing, Symposium, National Bureau of Standards, 2-3 June, 1970, 2216

Society of Photo-Optical Instrumentation Engineers Seminar-in-Depth on Developments in Laser Technology, Rochester, 17-18 November, 1969, 1238

SPIE Seminar-in-Depth on Fiber Optics: Applications and Technology, Dallas, 28-29 January, 1970, 1731

SPIE Seminar-in-Depth on Space Optics, University of California at Santa Barbara, 24-25 September, 1969, 420

SPIE 14th Annual Technical Symposium, San Francisco, 11-14 August, 1969, 380

SPSE Seminar on Low Light Level Systems, New York City, 19-20 March, 1970, 2212

Standards Laboratories, National Conference, 15-17 June 1970, National Bureau of Standards, 2608

U.S.-Japan Holography Seminar, 2nd, Washington, D.C., 13-17 October, 1969, 1496

Meteorology

- Dynamics of mesosphere and lower thermosphere, symposium, Boulder, 2609 (MR)
- Instrument invention, book, 1760 (N)
- Lidar results (R), 1782
- Lightning spectroscopy (E), 1775
- Parameters in launch vehicle environments, passive optical detection (E), 1044
- Photography with time lapse cameras (E), 1814

Methane

- Bibliography of thermophysical properties, 58 (N)

Metric System

- Conversion discussion, August All
- Limitations of, Dec. All
- National study conferences, 2219 (N)

Metrology

- Sessions at the 24th Annual ISA Conference, Houston, 1497 (MR)

Microscopes

- Diffraction images of general periodic rectangular wave object in polarizing, with crossed polarizers (T), 1379
- Dual focal plane, 1961 (P)
- Expanded exit pupil, 172 (P)
- Illuminator, 719 (P)
- Image contrast dependence on position of phase ring on phase contrast object (T), 1879
- Infrared, laser-assisted scanning technique for evaluating bond connections (E), 669
- Inter/Micro 1969, London, 419 (MR)
- Inter/Micro 1970, Chicago, 2611 (MR)
- Low-power semi-objective with field flattening lens, 1507 (P)
- Objective, flat-field apochromate, 985 (P)
- Past and present, 33 (B)
- Polarization, 2405 (P)
- Scanned laser infrared (E), 802
- Scanner, 760 (P)
- Semi-objective with field flattener, 985 (P)
- Skew grating use for exceeding cut-off frequency, 719 (P)
- Spatial filter to improve images, 1507 (P)
- Zoom type, 783 (P); 783 (P)

Microwaves

- RF magnetic fields visually observed by using cholesteric liquid crystals (E), 2795 (L)
- Spectral tables, 469 (B)

Mie Theory

- Efficiency factor calculations (T), 1932 (L)
- Particle size determination index of refraction effect in light scattering counters (T/E), 1930 (L); (T), 1931 (L)
- Scattering by individual spheres 7.5 μ to 110 μ diameter measurement by angular patterns (E/T), 2522
- Spherical particle scattering functions, coefficients of Legendre and Fourier series (T), 1888

Mirrors

- Alignment of off-axis parabolas, 1959 (P)
- Beryllium, thermal dimensional instabilities (E), 2691
- Blank evaluation of large glass-ceramic (E), 938
- Common test for plane (T), 840
- Cylindrical
 - In optical waveguides (T/E), 2377
 - Making, 993 (N)
- Deformity optical effects, thermal (T), 2028

Ellipsoid-hyperboloid combination for projection system, 2210 (P)

Graphite, for diffracting x-rays, 328 (N)

Grating and, system optical properties (T), 459

Highly reflecting optical coatings, absolute specular reflectance at 10.6 μ (E), 85

Mangin

Color corrected, 1962 (P)

Precalculation formulae for cemented doublet (T), 232 (L)

Random stacked for laser reflection (E), 2040

Solid, thermal deformation (T) 2481

Theoretical elastic deflections of a thick horizontal circular mirror

Double-ring support (T), 1453

Ring support (T), 149

Varifocal, for video transmission of three-dimensional images (E/T), 2035

Modes

- Propagation, constants of resonant waves on homogeneous isotropic slab waveguides (T), 2444

Modulation

Etalon, 1442 (N)

Fourier spectrum of chopped bivariate normal intensity distribution (T/E), 381

Optical communication system for two-dimensional images, 982 (P)

Modulation Transfer Function (see Optical Transfer Function)

Evaluation, of photographic materials using laser speckle pattern, 1482 (L)

General periodic rectangular wave object diffraction images in a polarizing microscope with crossed polarizers (T), 1379

Threshold modulation and, for photographic film (E/T), 875

Modulators

Acoustic light, and variable delay device, 1255 (P)

Birefringent laser output coupler with high efficiency, 1959 (P)

Color, system, 980 (P)

Image intensifier tube as shutter, 783 (P)

Interferometric combinations of frequency shifted mode locked laser pulses (T), 953

Interferometric, optical, 978 (P)

Kerr effect, 980 (P); 982 (P)

Light

Cubic crystal, 770 (P)

Efficiency enhancement of (T), 1222 (L)

Gunn effect, 1744 (P)

Improved read-in technique for optical delay line correlators (E/T), 135

Magneto-optic garnet, broadband, 2210 (P)

Optical phase, 1255 (P)

Phase, device, 2820 (P)

Polarization beam chopper (E), 2396 (L)

Polarization with Kerr cell, 979 (P)

Resonant Kerr effect, 979 (P)

Rubidium iron fluoride magneto-optical device, 1509 (P)

Scotophoric light valve, 978 (P)

Semiconductor junction electro-optic, 1255 (P)

Semiconductor optical, 1255 (P)

Solid transmittance change, use in, 979 (P)

Split beam light, 2210 (P)

Stark effect use, 982 (P)

Titanium oxide thin film, 1255 (P)

Wavelength independent for linearly polarized light (E), 1934 (L)

Moiré Patterns

- Generation of surface contours by (E/T), 942
- Interpretation to obtain contours of equal slope from an interferogram (T/E), 2804 (L)
- Science of, 1963 (B)
- Topography (E/T), 1467
- Use in measurement of film flatness (T/E), 2802 (L)

Molecular Structure

- Group theory and its application to, 1734 (B)

Monochromator

- Double-pass Ebert, observation of pseudo-half orders in (T/E), 1475 (L)
- Double-pass grating, with intermediate slit, 172 (P)
- Double system, 985 (P)
- Mirror and grating, optical properties of system (T), 459

Motion Pictures

- Embossed hologram, for television playback (E), 2283
- Front lighted 3-D holographic (E), 498 (L)
- Holographic, beam reduction for (E), 2187 (L)
- Three-dimensional projection, 160 (P)

National Aeronautics and Space Administration

- Laser, earthquakes and, 306 (N)
- Optics at
 - Electronics Research Center (R), 335
 - Jet Propulsion Laboratory (R), 271
 - Langley Research Center (R), 317
 - Lewis Research Center (R), 399
 - Marshall Space Flight Center (R), 369
- NASA, 243
- Program of airborne optical observations (E), 265
- Scientific and technical information systems, 1067 (N)
- Venus-Mercury flyby planned, 306 (N)

National Bureau of Standards

- Bibliographies, 58 (N)
- New publications, 72 (N); 997 (N); 2220 (N); 2408 (N); 2823 (N)

Newton's Fringes

- Testing of aspherical surfaces (E), 837

Nimbus

- Color enhancement of high resolution infrared radiometer data (E), 681

Nitric Acid

- High pressure transitions (E), 1

Nitrogen

- Infrared electronic emission spectrum (E/T), 195

Noise

- Considerations in optical beam recording (R), 2559
- Quantum, buildup of laser oscillations (T), 2433
- Spectral density of photosensitive materials at high spatial frequencies (E/T), 2080
- Suppression by spatial filter, 1509 (P)

Nondestructive Testing

- Laser assisted infrared scanning technique for evaluating bonded connections on beam lead microcircuits (E), 669
- Optimized pulse laser holographic (E), 1724 (L)
- Real-time measurements by optical correlation (T/E), 1385

Nonlinear Optics

- Conference, Queen's University of Belfast, 404 (MR)
- Explanation of excited state absorption in saturable absorbers using a triple absorption model (T), 233 (L)
- Upconversion imaging use (T), 2266

Nuclear Magnetic Resonance

- Reduction of time for spectra technique, 1967 (N)

Oceanography

- Effects of particle size on contrast improvement by polarization discrimination for underwater targets (E), 421; (E/T, R), 1932
- Radiance distribution camera system (T/E), 2015

Of Optics and Opticists, 71, 997, 1494, 1736, 1967, 2218, 2409, 2822

Ophthalmoscope

- Holography use, 784 (P)

Optical Activities in Industry, 412, 779, 993

Optical Activities in the Universities, 2203, 2606

Optical Activity

- Instrument to measure, 1960 (P)

Optical Beam Recording

- Noise considerations (R), 2559

Optical Bonding Agents

- Severe environment (E), 2581 (L)

Optical Cavities

- Degenerate, effect of aberrations (T), 1192

Optical Communications

- Beam redirector, 983 (P)
- Direct detection receiver with paraboloidal array of spherical segments (T) 2798 (L)
- Enclosed path, 1505 (P)
- Experiments (E), 1167
- Interferometric combinations of frequency shifted mode locked laser pulses (T), 953
- Polarized color, 1254 (P)
- Principles, course at MIT, 1472 (N); 1493 (N)
- Techniques for matching laser TEM₀₀ mode to obscured circular aperture (T/E), 1435
- Three-dimensional vector diagrams as aid in analyzing (T), 1683

Optical Components

- Variable wedge birefringent compensator (E), 1220 (L)

Optical Constants

- Pseudo-Brewster angle and (T), 1717 (L)

Optical Convolution

- Time functions (T/E), 1672

Optical Data Processing

- Sample Fourier transform hologram generated by computer (T/E), 639

Optical Delay Line

- Device with image preservation, 2821 (P)

Optical Design

- Focusing through a flat plate; dependence of aberration on the refractive index (T), 2800 (L)

Optical Detection

- Passive, of meteorological parameters in launch vehicle environments (E), 1044

Optical Devices

- Atmospheric pressure change compensated, 2821 (P)
- Binary switch, 1957 (P)
- Bubble chamber observing, 1743 (P)
- Coherent optical joint, 764 (P)
- Conical lens, improved collection efficiency (E), 2388 (L)
- Focal plane determining system, 2821 (P)
- Fresnel annular zone objective (E), 2807 (L)
- Gyroscope lens, 1254 (P)
- Headlamp aiming, 784 (P)
- Hotbox detector, 982 (P)
- Measurements with multiple light ray path through grating, 349 (P)
- Noncontact measurement of small microdisplacements (E/T), 2337
- Periscope sextant, 978 (P)
- Sight, improved, 979 (P)

Optical Fabrication

- Beryllium surface preparation (E), 539

Optical Instruments (see also individual instruments)

- Endoscope from plastic rod stock, 719 (P)
- Handbook on construction, 338 (B)
- Reduction of veiling glare in, by absorbing glass lens elements (T), 2388 (L)

Optical Materials

- Bonding agents for severe environment (E), 2581 (L)
- Organic, protection against ultraviolet, 719 (P)
- Refractive index of Corning 9025 glass (E), 1477 (L)
- Simulated space effects on properties (R), 2101

Optical Measurements

- Angles, using interferometer (T), 1630
- Distance using lasers, 1254 (P)
- Moiré topography (E/T), 1467
- Optical flats, wedge angle (E), 509 (L)
- Optical path difference (E), 1935 (L)
- Small microdisplacements with noncontact device (E/T), 2337
- Thickness of silicon layers (T/E), 2381

Optical Memories

- Read-write holographic (T), 2271
- Read-write mass memory (E), 2269
- Transparent ferroelectric ceramic, 2409 (N)

Optical Mixer

- GaAs Schottky-barrier photodiode evaluation using 6328-Å radiation modulated at 4 GHz (E/T), 489

Optical Properties

- Cesium cupric chloride (E/T) 2794 (L)
- Calcium tungstate light conversion efficiency using a light intensifier tube (T/E), 1403
- Natural water with radiance distribution camera (T/E), 2015
- Silicon oxide films irradiated with ultraviolet radiation thickness change (E), 1577
- Single crystal pyrrargyrite growth and (E), 1716 (L)
- Solid laser materials, piezoelectric and thermooptic, 2408 (N)
- Space environment effects simulated on optical coatings and materials (R), 2101

Optical Pumping

- Atomic line shape and, 1733 (B)

Optical Sciences Center

- University of Arizona, 2413, 2606 (N)

Optical Rotary Dispersion

- Rhomb-type quarterwave retarder (T), 2123

Optical Shown

- Flange focal distance measurement (E), 1247 (L)
- Interferometer testing and optical figuring (E), 1219 (L)
- Making cylindrical mirrors, 993 (N)
- Preparation of drawings for optical elements and methods of testing (T/E), 527; 2598 (L); 2599 (L); 2599 (L)
- Sapphire flats, making, 779 (N)
- Tolerances, (R), 527; 2598 (L); 2598 (L); 2599 (L)
- Variable refractive null lens (T/E), 849
- Working of infrared materials (E), 675

Optical Signal Processing

- Low spatial frequency enhancement with optical aperture tapering (E), 1902

Optical Society of America

- Annual meeting, Chicago, 21-24 October, 1969, 543 (MR)
- Annual meeting program, Hollywood, Florida, 28 September-3 October 1970, 2197
- Corporation members, 977 (N)
- Research and education, 1251, 2204, 2818
- Spring meeting, Philadelphia, 7-10 April, 1970, 1950 (MR)
- Technical Groups, 564 (N)

Optical Systems

- Analysis and design, normalization of Delano diagram (T), 2485
- Catadioptric Cassegrain, high-speed, 160 (P)
- Converts gaussian to uniform amplitude distribution, 1738 (P)
- Four-mirror objective with intermediate image, 214 (P)
- Fresnel annular zone objective (E), 2807 (L)
- Optically compensated, 4:1 variable magnification, 172 (P)
- Three-dimensional vector diagrams as aid in analyzing (T), 1683

Optical Testing

- Aberration analysis by double wire testing (T/E), 1720 (L)
- Aspherical surfaces with Newton fringes (E), 837
- Common test for plane mirrors (T), 840
- Concentric telescopic meniscus for underwater lens testing (T), 771
- Electrooptics systems, automatically (E), 2298
- Holo-diagram, information retrieval in interferometry (T/E), 97
- Holograms for test glasses (E), 822
- Improved collimation test (E), 2590 (L)
- Interferometer, aspects (E), 1219 (L)
- Interferometer, simple, based on Ronchi test (E), 1943 (L)
- Interferometric method, simple, for workshop (T), 1623
- Laboratory services available, 1737 (N)
- Instruments for semiconductors, 2822 (N)
- Lens, automatic, 984 (P)
- Preparation of drawings (E), 527
- Quasi-Ronchigrams as mirror transitive images of shearing interferograms (E/T), 1477 (L)
- Ronchi test for aspherical surfaces (T), 1897
- Variable refractive null lens (T/E), 849

Optical Transfer Function

- Effect of apodizing screen on rectangular and triangular wave response of circular aperture with incoherent incident light (T), 129

Optical Windows

Interferograms of window wavefront deformation as angular measure of deviation to a line of sight (E/T), 1097

Optics

Ames Research Center (R), 245
Applied, course, Imperial College, London, 1258 (N)
Associate in applied science technician, problems and solutions, 895
Basic, and instruments, 1494 (N)
Bonding agents (E), 2581 (L)
Book lists, 2204 (N)
Contemporary, course, University of Rochester, 977 (N)
Drawings for optical elements and methods of testing, preparation (T/E), 527; 2598 (L); 2599 (L); 2599 (L)
Electron optics and, competitive and complimentary technologies in electronics (R, T), 2294
Electronics Research Center (R), 335
Experiments with laser source, 999 (N)
Future manpower needs, 1251 (N)
Goddard Space Flight Center (R), 1003
High pressure (E), 1
ICO Congress, 14-19 July, 1969, Reading, minutes, 457
International publication problems, September All
Jet Propulsion Laboratory (R), 271
Langley Research Center (R), 317
Lewis Research Center (R), 399
Mariner imaging instrument (E), 277
Marshall Space Flight Center (R), 369
NASA, 243
New paperback books, 2203 (B)
Nonlinear, introduction, 16 (B)
Physicists working in, 1251 (N)
Progress in, 1244 (B)
Publication problems, Nov. All
RCA Corporation, 2223
University of Arizona Optical Sciences Center, 2412, 2606 (N)
Wave, elementary, 1244 (B)

Oscillograph

With semiconductor voltage controlled light valve, 985 (P)

Oximeter

Fiber optics probe, 784 (P)

Oxygen

Absorption coefficients at the Lyman- α line and other transmission windows (E), 1709 (L)
Determination in silicon and germanium by infrared absorption, 2408 (N)
Infrared electronic emission spectrum (E), 1419

Ozone

Absorption, long path atmospheric, in 9-10- μ region observed from balloon-borne spectrometer (E/T), 565
Atmospheric, statistical band model in 9-10- μ region (T), 2600 (L)

Panoramic Viewing

Stray light elimination, 760 (P)

Parametric Oscillators

Nonlinear crystals for (E/T), 1490 (L)

Particles

Fog droplet size distribution evolution by laser scattering (E), 2517

Foreign, in atmosphere, detected by fluorescence device, 982 (P)

Holographic sizing, 760 (P)

Irregular, scattering of polarized light by polydisperse systems (E/T), 1113

Phase-space dynamics, 1500 (B)

Patents (see also specific subject), 160, 349, 719, 978, 1254, 1505, 1739, 1954, 2208, 2403, 2819

Pattern Recognition

Pictorial, self-optimizing self-learning system (E), 2453

Periscopes

Borescope, 214 (P)

Large field-of-view, 1960 (P)

Single objective, binocular, 1961 (P)

Perrin, J. B.

Biographical note, 1368 (N)

Phase Filters

Generation of periodic amplitude (E), 2585 (L)

Phase Shift

Optical device, 1955 (P)

Phosphor

Higher output by color filter, 172 (P)

Photocathodes

Area sensitivity on integrated spectral line intensities (E), 2398 (L)
Control of absorbance of a multilayer (T), 863
Detailed stability in the image orthicon (E), 1719 (L)
Fatigue effects on the area sensitivity, dynode gain and anode output for several end-on photomultipliers (E), 321
Optical devices to increase quantum efficiency (R, E), 251

Photocell

Parts in series to increase output voltage and decrease capacitance, 1960 (P)

Photochromatism

Display system use with laser, 2821 (P)
Eye protection fluids, 2209 (P)
Glass detector overload protection, 770 (P)
Holographic recording on electron beam colored sodium chloride crystals (E), 1658
Image intensifier use, 985 (P)
Inorganic, and cathochromics, recording materials (E), 2236
Optical fiber switch, 2209 (P)
Optical logic system use, 1507 (P)
Properties in two-way communication system (E), 2243
Protective eyeglass, 1507 (P)
Use in holography (E), 201

Photocopying

Automatic focus, 980 (P)
Reversal image method, 783 (P)

Photodetectors

Diodes
Germanium with extended long wavelength response (E/T), 1842
Electronic enhancement of performance (E), 2597 (L)
Image converter, 1955 (P)
Schottky-barrier GaAs using 6328-Å radiation modulated at 4 GHz (E/T), 489
Silicon solar cell (T/E), 73

Photoelastic Constants

Dispersion, technique to study in cubic and noncubic crystals (E), 155

Photoelectrons

Spectroscopy session, New York, 976 (MR)

Photoemission

Detailed photocathode stability in the image orthicon (E), 1719 (L)
Technique for the study of adsorption in the aluminum-oxygen and aluminum-water systems (E), 79

Photographic Emulsions

Granularity, 1943 (L)
Nonlinearity production of undesired light in reconstructed hologram image (T/E), 810

Photographic Materials

Coherent optical power spectra (E), 1424
Instrument for recording optical-path variation of transmitting objects (E/T), 1345
Modulation transfer function using a laser speckle pattern (E), 1482 (L)

Photography

Abstracts, 1494 (N)
Action of ionizing radiations, 1245 (B)
Color reproduction on monochromatic film, 1962 (P)
Density filters, 2209 (P)
Density measurement comparison with TV waveform analysis as expression of observed landscape patterns on radar (E), 749
Diffuse density measuring photometer, 1743 (P)
Electrocatalytic, 1955 (P)
Elements for plurality of images and process, 1955 (P)
Emulsion shrinkage correction with triethanolamine (E), 238 (L)
Encyclopedia, 34 (B)
Films, threshold modulation curves (E/T), 875
High-speed, and flash x-rays, courses, 276 (N)
Holographic film, pulsed laser techniques for people (E), 815
Images, linear vector operations in coherent optical data processing systems (E/T), 687
Materials, noise spectral density at high spatial frequencies, (E/T), 2080
Method of measuring diffuse RMS granularity (E), 871
Modulated image, 1509 (P)
Multispectral with wide-angle lens and interference filter (T), 2435
Optical restoration of images blurred by atmospheric turbulence using optimum filter theory (E/T), 167
Organic titanium compounds for transparencies, 719 (P)
Preserving photostored images, 1957 (P)
Reversal image method, 783 (P)
Science congress, Moscow, 320 (N)
Sensitometry, infrared, high-speed with neodymium laser (E), 1481 (L)
Space, and the exploration of Mars (R), 1270
SPIE conference, New York, 1258 (N)
Stereoscopic, process, 1962 (P)
Time lapse
Camera (E), 1811
Clouds (E), 1814; (E), 1817
Unlikely, exhibition, 870 (N)

Photomasks

Multiple pin hole, 764 (P)

Photometry

Calibration changes in EUV solar satellite instruments (R, E), 1201; 1697
Enriched energy calculation for annular aperture (T), 1874
Infrared and visible comparison (E), 2786 (L)
Integrating cube scattering detector (E), 2706
Low-angle, light scattering with Model LS-2 (E), 1330
Photoelectric system for extreme solar limb darkening in different wavelengths with high resolution time (E), 2661
Retro-reflective, for screen efficiency evaluation (T/E), 2134
Standards and the unit of light, 1245 (B)

Photomicrography

Stereo projection, 160 (P)

Photomixing

Mixing partially coherent fields with gaussian irradiance profiles, optimization criteria (T), 115
Spatial filtering properties of reference beam in optical heterodyne receiver (T), 1159

Photomultipliers

Area sensitivity effect on integrated spectral line intensities (E), 2398 (L)
Device for differential light sensing, 1955 (P)
Fatigue effects on area sensitivity, dynode gain, and anode output for several end-on tubes (E), 321
Light amplifier and, compared theoretically for Raman spectra recording (T), 502 (L)
Optical devices to increase photocathode quantum efficiency (R, E), 251
Photocathode quantum efficiency enhancement for RCA 31000E, at 6328 Å (E), 2192 (L)
Recording spectra efficient use (E), 63
Solar-blind systems for satellite applications (E), 581
Yield of channel electron multiplier in the 304-1493-Å wavelength range (E), 505 (L)

Photon Counters

Instrument for eclipse use (E), 2650
Proposed multichannel spectral recording instrument, comments (T), 503 (L)

Photon Statistics

Calculation of average and mean square flux densities (T), 2578 (L)
Laser oscillation and noise (T), 2423

Photo-Optical Instrumentation

Technical symposium, San Francisco, 380 (MR)

Photopolymers

Conference, Ellenville, New York, 1191 (N)

Photo-Recording

Digital data in diffraction grating pattern, 2404 (P)

Photoresists

Standing waves in (T), 969 (L)

Photosensitive Materials

Thick absorption recording media in holography (E), 201

Phthalocyanine

Explanation of excited-state absorption in, using triple absorption model (T), 233 (L)

Physics

- Concepts in, 338 (B)
- Institutions producing research, 999 (N)
- International publication problems, September All
- Manpower in the United States, 2410 (N)
- Secondary services of, 997 (N)

Planetary Atmospheres

- Colloquium, Woods Hole, 403 (MR)

Plants

- Canopies, light relations in (T), 177
- Leaves, effective optical constants (E/T), 2573

Plasmas

- Diagnostics by infrared interferometry with a CO₂ laser source and liquid crystal detection (E), 1319
- Electron density, plasma self-Q-switching in far infrared lasers (E), 653
- Radiation beam deflection system, 350 (P)
- Spectroscopy, 874 (B)

Plastics

- Refractive index estimation by a spectrophotometric method (E), 501 (L)

Polarimeter

- Automatic, 760 (P)
- Photography, for solar observations (E), 1933 (L)

Polarization

- Analyzers with automatic readout, 2403 (P)
- Circular dichroism measurement, 2403 (P)
- Compensated generalized Savart plate, 2403 (P)
- Effects of particle size on contrast improvement by, discrimination for underwater targets (E, R), 421; (T), 1932
- Effects reduction in interference coatings (T), 866
- Fabry-Perot duochromator (E), 1137
- Far infrared radiation transmission through metal light pipes (E/T), 971 (L)
- Holography, effects in (E/T), 2394 (L)
- Light
 - Depolarizer, 2403 (P)
 - Scattering by polydisperse systems of irregular particles (E/T), 1113
 - Use in making master drawings, 764 (P)
- Long path difference interferometry using a simple gas laser (E), 2809 (L)
- Measurement of, interferometric approach (T/E), 1075
- Microscope, 2405 (P)
- Optical communications system use, 1254 (P)
- Radiation from plane-parallel atmosphere containing mono-dispersed aerosols (T), 2673
- Systems for measuring extended astronomical objects (E), 2648
- Radiation reflected and transmitted by earth's atmosphere (T), 1122
- Rhomb-type quarterwave retarder evaluation (T), 2123
- Wavelength independent modulator for linearly polarized light (E), 1934 (L)

Polarizers

- Alignment, absolute determination (T/E), 1708 (L); 1710 (L)
- Birefringent, 2403 (P)
- Light depolarizer, 2403 (P)
- Total, with most of light in one state of polarization, 1256 (P)
- Ultraviolet, 979 (P)
- Viewer use, 171 (P)

Polishing

- Technique effect on the roughness and residual surface film on fused quartz optical flats (E), 236 (L)

Power Spectra

- Study of rough surfaces by light scattering (T), 2470

Pressure

- High
 - Dependence of infrared-active phonons in the mixed crystal system KCl_{1-x}Br_x (T/E), 5
 - Infrared polarized spectroscopy of acetonitrile single crystals (E), 17
 - Methods in solid state research, 15 (B)
 - Raman spectra (E), 11
 - Transducer for space use, 315 (N)
 - Transition effects in calcite and HNO₃ (E), 1

Pressure Broadening

- Temperature dependence of self-broadened half-width of the P-20 line in the 001-100 band of CO₂ (E), 1230 (L)

Printed Circuits

- Master drawings by polarized light, 764 (P)

Prisms

- Lens and, abridged sets (E), 774 (L)
- Direct vision dispersion, systems (T), 859

Profiles

- Section, by interference fringe illumination (E), 2158 (L)

Projector

- Condensing system, 1739 (P)
- Ellipsoid-hyperboloid mirror combination, 2210 (P)
- Image, 2404 (P)
- Light collection system for, 214 (P)
- Reflecting light collector system for, 172 (P)
- Stage-lighting, 2820 (P)
- Stray light elimination, 760 (P)
- Three-dimensional apparatus, 1255 (P)
- Variable magnification, 2820 (P)

Pulse Frequency Multiplier

- Beam splitter and delay loop device, 760 (P)

Pumping (see also Lasers)

- Laser by nuclear energy source using phosphor transducer, 1957 (P)
- Optical, by fast response shock ionization, 1954 (P)
- Optical detection of magnetic resonance (E), 1937 (L)
- Tuned nitrogen laser, for dye laser (E), 2742

Pyrargyrite

- Growth and optical properties of single crystal (E), 1716 (L)

Pyreheliometers

- Two blackbody radiometers of high accuracy (E), 1082

Pyroelectric Detectors

- TGS properties (E), 1940 (L)

Pyroelectric Effect

- Theory of optical heterodyne detection using (T), 161

Pyrometer

- Optical, high speed, 2823 (N)
- Two color radiation ratio, 982 (P)

Q-Switching

- Lithium niobate and KD*P cells and transient elastooptical effects (E), 1939 (L)
- Lithium niobate single crystal, 221 (P)
- Manually triggered high speed synchronization, 1955 (P)
- Mode controlled tunable ruby laser, 1211 (L)

Quantum Efficiency

- Cathode, enhancement for RCA 31000E photomultiplier at 6328 Å (E), 2192 (L)

Quantum Electronics

- Course, Prescott, 276 (N)
- Text, 2206 (B)

Quantum Mechanics

- Intermediate, 1501 (B)

Quartz

- Fused, effect of polishing technique on the roughness and residual surface film (E), 236 (L)

RCA Corporation

- Optics, 2223

Radar

- Doppler for remote sensing of the atmosphere (R), 1976

Radiance

- Distribution of natural water, by camera (T/E), 2015
- Effects upon intensity measurements due to scattering by optical elements (T/E), 609
- Measurements of ultraviolet spectral, of the horizon sky (E), 1574

Radiation

- Atmosphere, 1242 (B)
- Beams, formation of uniform, from long and thin radiators (T/E), 553
- Characteristics of a scattering, absorbing dielectric sheet (T), 2359
- Device to couple optical energy into bulk material, 1959 (P)
- From homogeneous isothermal sphere (T), 2685
- Nonionizing, safety conference, Cincinnati, 2684 (N)
- Properties of a semitransparent spherical body (T), 2790 (L)
- Thermal, absorbing surface for measuring intense (E), 1473 (L)
- Thermocouple laser power meter analysis (T), 2594 (L)

Radiometry

- Absolute, 982 (P)
- Absolute calorimeter arrangement, 1744 (P)
- Beam sampling apparatus, 1505 (P)
- Blackbody of high accuracy (E), 1082
- Cavity, 2404 (P)
- Infrared, color enhancement of Nimbus high resolution data (E), 681
- Infrared for airborne measurement of total heat flow from the sea (E/T) 2697
- Spatial response nonlinearities (E), 2130
- Standard, one-solar-constant irradiance (E), 1410
- Temperature and absorbing gas profile of an atmospheric radiative transfer by iteration (E/T), 1993
- Tracking high altitude vapor release by day (E), 2666

Rain

- Extinction and backscattering at 10.6 μ and 0.63 μ (E/T), 1563

Raman Spectra

- Light amplifier and photomultiplier tube recording, theoretical comparison (T), 502 (L)
- Liquid and solid bromine and carbon dioxide under high pressure, using laser (E), 11
- Organic compounds, correlation with infrared spectra, 874 (B)

Raman Spectrometer

- Design criteria (E), 1304

Rangefinder

- Coincidence, of variable sensitivity, 2821 (P)
- Optical device, 984 (P)

Ranging

- Automatic optical, using birefringent element, 1959 (P)
- Laser for astronaut on the moon (T/E), 2256
- Optical spatial filter for achieving wide dynamic range in air-to-water optical transmission (T/E), 507 (L)

Rankine, J. M. R.

- Biographical note, 700 (N)

Rare Earths

- Research conference, Reno, 544 (N)
- Spectra and energy levels of ions in crystals, 1241 (B)

Recording

- Photoelectric element, 770 (P)

Reflectance

- Absolute specular, measurements of highly reflecting optical coatings at 10.6 μ (E), 85
- Anisotropic, characteristics of natural earth surfaces (E), 405
- Apparatus, measurement by chopped beams, 2404 (P)
- Infrared, of high altitude clouds (E), 561
- Light, relation to histological and physical evaluations of cotton leaf maturity (T/E), 545
- Measuring photometer, 1743 (P)
- Nomenclature and directional reflectance and emissivity (T), 1474 (L)
- Plant leaves optical constants (E/T) 2573
- Pseudo-Brewster angle and optical constants (T), 1717 (L)
- Solar radiation, by plant canopies (T), 177
- Surface, comparison of materials, 1741 (P)

Reflectors

- Design based on the transformation of power densities (T), 1702
- Uniform beams from long and thin radiators (T/E), 553

Refractometer

- Temperature compensating, 2404 (P)

Remote Sensing

- Atmosphere (R), 1971
- Colorado State University graduate curriculum, 2218 (N)

Research

- Development and, symposium, Zagreb, 1237 (MR)

Resolution

- Sparrow limit and interferometer surface imperfections (T), 2326
- Testing of coherent optical systems using linear gratings (E/T), 2746
- Threshold modulation curves for photographic films (E/T), 875

Resonance

Organic magnetic, new journal, 1963 (B)

Resonators

Applications, Porro prism for high power, 1955 (P)
Asymptotic expression for the resonant mode losses of a Fabry-Perot open (T), 733
Continuously tunable, 752 (P)
Cylindrical, with large mode volume and variable output pulse length, 1954 (P)
For suppression of whispering modes, 1957 (P)
Laser with resonate orthogonal polarization phased in quadrature, 1959 (P)
Mode-selecting, 1739 (P); 1743 (P)
Multiple internal reflective prisms, 160 (P)
Ray analysis, formed by two spherical mirrors (T/E), 385
Unstable optical, loss calculations using Prony method (T), 2729

Retarders

Rhomb-type quarterwave evaluation (T), 2123

Reticles

Passive bright pattern, 760 (P)
Three-layer photoelectric element, 770 (P)

Retroreflectors

Photometry for screen efficiency evaluation (T/E), 2134

Ronchi Test

Quasi-, and mirror transitive images of interferograms (E), 1944 (L)
Use in simple interferometer (E), 1943 (L)

Rotators

Faraday effect, 1509 (P)
Faraday, TEM mode, 350 (P)

Rubidium

Vapor arc lamp spectral radiance between 0.42μ and 1.1μ as function of power input and pressure (E/T), 913

Sapphire

Flats, optical, making, 779 (N)

Satellites

Applications for solar-blind photoelectric detection systems (E), 581
Calibration changes in EUV solar instruments (E, R), 1201, 1697
Meteorological, visible and infrared imagery from (R), 1747
SIRS, free air temperature measurement (T/E), 1761

Sauter Mean Droplet Diameter

Fuel nozzle sprays, technique for determining (E), 2007

Scanners

Acoustic light, and display system, 2405 (P)
Bender-bimorph, analysis (T), 933
Fiber optics for navigation, 980 (P)
Field flattening, 1743 (P)
Fine detail radiance differences in image enhancement, 2404 (P)
Laser, 1741 (P); 1743 (P); 2405 (P)
Laser device with light polarizers, 2819 (P)
Linear optical using traveling-wave acoustic lens (T/E), 2154
Microscope, 760 (P)
Optical
Character recognition device, 984 (P); 984 (P); 984 (P)

Device, 1256 (P)

Rotating mirror, 1254 (P)

Spatial and temporal analysis (T), 1906

Spectral, high speed electrooptical (E), 1911

Spherical mirror, 1256 (P)

Star tracker assembly, 2405 (P)

Resolvable element enhancement for coherent sources, 2821 (P)

Two plane light deflectors, 985 (P)

Utilizing a pair of time shared apertures, 2209 (P)

Width of glowing objects using photocell, 1957 (P)

Scattering

Atmosphere, lidar system calibration (E/T), 1820

Cloud physics laser nephelometer (E), 1798

Coefficients of atmospheric aerosols in the infrared, prediction (T), 1337

Coherent light, optical power spectra of photographic materials (E), 1424

Detector, integrating cube (E), 2706

Etched glass (E), 2177 (L)

Forward, in settling aerosol (E/T), 2372

Index of refraction effect on particle size determination by light scattering counters (T/E), 1930 (L); (T), 1931 (L)

Individual transparent spheres 7.5μ to 110μ diameter, angular measurement (E/T), 2522

Interferometric approach to the measurement of optical polarization (T/E), 1075

Intensity and polarization, plane-parallel atmosphere containing monodispersed water spheres (T), 2673

Laser, for fog droplet size distribution (E), 2517

Light

And other electromagnetic radiation, 2206 (B)

Infinite cylinders (E), 2787 (L)

Measurement of noise spectral power of photosensitive materials (E/T), 2080

Measurement of Sauter mean droplet diameter in fuel nozzle sprays (E), 2007

Northwestern University summer school, 1265 (N)

Photometer Model LS-2 (E), 1330

Spectra of solids, 1733 (B)

Mie, Legendre, and Fourier series coefficients for spherical particles (T), 1888

Modified Fourier transform method for multiple, calculations in a plane parallel Mie atmosphere (T), 1457

Optical elements, effects on radiant intensity measurements (T/E), 609

Polarization of the radiation reflected and transmitted by the earth's atmosphere (T), 1122

Polarized light by polydisperse systems of irregular particles (E/T), 1113

Rough surfaces (T), 2470

Second and higher order, in settling polydisperse aerosol (E/T), 2362

Two Rayleigh-Debye spheres (T), 429

Wavelength dependence of atmospheric extinction (T), 2539

Schlieren Systems

Auto collimating device, 1957 (P)

Schwerd, F. M.

Photographs of, 470 (N)

Science

American Physical Society statement on funding, 2219 (N)

Immigrant rate drop, 1736 (N)

Interdisciplinary programs of National Science Foundation, 1259 (N)

International publication problems, September All
National Science Foundation fellowships, 2568 (N)
Program guide of National Science Foundation, 2823 (N)
Research of independent nonprofit institutions in 1966, book,
72 (N)
U. S. Government civil service positions, information and
applications, 2818 (N)

Screens

Rear projection, 1955 (P)
Three-dimensional picture projection, 2404 (P)

Sea

Total heat flow from airborne radiometric measurement
(E/T), 2697

Semiconductors

Doped, detector element for infrared, 2405 (P)
Magnetic, symposium, Yorktown Heights, 438 (MR)
Optical instruments for testing, 2822 (N)

Sextants

Periscope, 978 (P)

Shock Tubes

Absorption technique for measuring OH concentrations (E),
329

Shutters

Image intensifier tube use, 783 (P)

Sight

Optical, 979 (P)

Signal Processing

Holographic system for large time-bandwidth product multi-
channel spectral analysis (T), 229 (L)
Three-dimensional vector diagrams as aid in analyzing optical
systems (T), 1683

Signal-To-Noise

Optical beam recording (R), 2559
Spectral broadening in turbulence structure measurement using
cw laser (E/T), 633

Silicon

Cell in star tracker, 2405 (P)
Epitaxially grown layers thickness measurement using infrared
(T/E), 2381
Solar cell as photometric detector (T/E), 73
Symposium on processing, NBS, 2216
Total hemispherical emittance at low temperature (E), 1222
(L)

Silicon Oxide

Films, change in thickness and other optical properties of ultra-
violet irradiated (E), 1577

Sky

Horizon, measurements of ultraviolet spectral radiance (T),
1574

Sodium

Oxygen and carbon content by photon activation analysis, 1967
(N)

Solar Cell

Silicon as photometric detector (T/E), 73

Solar Constant

Irradiance standard (E), 1410

Solar Simulator

Jet Propulsion Laboratory (E), 1068
Spectral modification for (E), 1014

Solid State

Absorption spectra from experimental infrared data (T/E),
2768
High pressure methods in research, 15 (B)

Solid Surfaces

Molecular processes on, 469 (B)

Sources

Arc lamp, Hg + Tl, with variable mercury loading (T), 2711
Carbon lamp, for 1931 Å line for photochemistry (E), 1711 (L)
Extreme ultraviolet, gas discharge lamp (E), 1155
Lamps with spherical cathode, 2404 (P)
Light, uniform variable, for instrument calibration (E), 1092
Moving light generator, employing electromagnetic field, 349
(P)
Nanodischarge spark, static model (T), 1698
Rubidium and cesium vapor arc lamps for spectral radiance
between 0.42 μ and 1.1 μ as function of power input and pres-
sure (E/T), 913
Semiconducting solid solutions, 2210 (P)
Vacuum ultraviolet plasma arc for the 300-1000-Å wavelength
region (E), 41

Space

Carbon monoxide detected in, 2410 (N)

Space Environment

Simulation studies for surface contamination and degradation
of optical coatings and materials (R), 2101

Space Optics (see also Optics)

Mariner imaging instrument (E), 277
OSA Technical Group meeting, 7 April, 1970, 2014 (MR)
Small LiF prism spectrometer for (E), 601
SPIE Seminar-in-Depth, Santa Barbara, 420 (MR)
Summer school, Marseille, 258 (N)

Spark Discharge

High current, explosive anode erosion (E), 1695

Spatial Filters

Acoustic surface wave visualization in an experimental Fabry-
Perot interferometer (E), 2805 (L)
Binary for differentiation, 1961 (P)
Matrix multiplication by optical methods (T), 2161
Noise suppression use, 1509 (P)
Optical for achieving wide dynamic range in air-to-water
optical transmission (T/E), 507 (L)
Optical, use of film nonlinearities (T/E), 215
Preserving photostored image, 1957 (P)
Properties of the reference beam in an optical heterodyne
receiver (T), 1159
System, 2821 (P)
Thin CdS films, 1714 (L)

Spatial Response

Radiometers (E), 2130

Spectra

Absorption cell for long pathlengths at low temperatures (E),
222 (L)

Atomic, optical, bibliography, 58 (N)
 Characteristic of energy absorption in dielectric solids (T/E), 2768
 Gamma ray, measurements of Mars, 1289
 Infrared, dielectric solids (T/E), 2768
 Lattice, in dielectric solids (T/E) 2768
 Light scattering, of solids, 1733 (B)
 Luminescence, measurement with digital recording system (E), 1312
 Photomultiplier tubes for recording efficiently (E), 63
 Raman, dielectric solids (T/E), 2768
 Scanning, high speed electrooptical (E), 1911
 Solar simulation modification (E), 1014

Spectral Line Shape

Meeting, Seattle, 1896 (N)

Spectral Power Distribution

Spectral response and, optical interference filters for adjustment (E), 1396

Spectrochemical Analysis

Apparatus, 1744 (N)
 Gases by infrared, 1741 (P); 1741 (P)

Spectrographs

Diffraction filters in XUV (T/E), 447
 Echelle grating and high dispersion stellar (E), 2332
 Kerr-cell shuttered f/1.5 stigmatic, for nanosecond exposures (E), 259
 Slitless, anamorphic condensing optics (E), 49

Spectrometer

Derivative (T/E), 1597
 Diffraction grating, 2405 (P)
 Double-pass Ebert monochromator, pseudo-half order observation (T/E), 1475 (L)
 Electron-impact, high-resolution for chemical analysis of gases and vapors (E), 2148
 Encoding, doubly multiplexed dispersive (T/E), 1149
 Fabry-Perot photoelectric, analytic description (T), 1591
 Fabry-Perot, twelve channel multiple interferometer (E), 2529
 Grazing incidence concave grating drive improvement, 2408 (N)
 High luminosity, for night airglow studies (E), 1225 (L)
 Infrared, far (E), 617
 Infrared, mid and far, vacuum grating (E), 23
 Light rotation in dispersing element device, 350 (P)
 Mirror and grating system, optical properties (T), 459
 Near infrared, simple digital (E), 1610
 Optical, design, 338 (B)
 Performance, for measuring earth radiance near 4.3μ (E), 924
 Pseudo-random binary sequences for multiplex codes (E/T), 2658
 Radiation gate, 350 (P)
 Raman, design criteria (E), 1304
 Raman and infrared, on-line acquisition of data with time-sharing computer (E), 1615
 Rapid-scan, 214 (P)
 SISAM (E), 1587
 Small LiF prism, for space applications (E), 601
 Solar extreme ultraviolet observations from the OSO-1 satellite (E), 1006
 Stellar, 172 (P)
 Vacuum ultraviolet, computer controlled stop-scanning, for beam foil spectroscopy (E), 929

Wavelength modulation, for optical properties of solids (E), 627
 X-ray fluorescence, 980 (P)

Spectrometry

Mass, introduction, 33 (B)

Spectrophotometer

Circular variable wavelength interference filter, 172 (P)
 GE photomechanical optical triggering device (E), 2143
 Infrared lamellar grating (E), 2582 (L)
 Null system using chopping, 350 (P)
 Recording, 821 (N)
 Refractive index estimation by (E), 501 (L)
 Sensitive for reflectance and transmittance measurements (E), 1926
 Solvent chart available, 1737 (N)
 Source circuit modification, Cary instrument (E), 2585 (L)
 Two-wavelength infrared, 979 (P)

Spectropolarimeter

Double monochromator, 1256 (P)

Spectroradiometer

Computer based system (E), 888

Spectroscopy

Applied, conference, Cleveland, 1500 (MR)
 Applied, developments, 1501 (B)
 Applied, meeting, St. Louis, 2516 (N)
 Atomic absorption, for detection of resonance lines, 350 (P)
 Beam foil
 Axicon systems for collecting spectra (E/T), 53
 Computer controlled step-scanning vacuum ultraviolet spectrometer (E), 929
 Chemistry and, conference, Anaheim, 975 (MR)
 Diatomic molecules, rotational energy levels and line intensities, monograph, 2823 (N)
 Doppler shift measurement in duochromator for small spectral line shifts (E), 494 (L)
 Fourierscope, demonstration (E), 1721 (L)
 Furnace, 0.2 MW (E), 1606
 Hadamard-transform image scanning (T), 1392
 Infrared at high pressures, polarized spectra of single crystals of acetonitrile (E), 17
 Infrared electronic emission, of nitrogen (E/T), 195
 Integrating cavity measurement of absorption coefficient (T/E), 2140
 Interferometric, using beat technique (T), 2182 (L)
 Internal reflection
 Absorption cell, 2404 (P)
 Basic requirements, booklet, 134 (N)
 Enhanced absorption device, 350 (P)
 Powder infrared spectra, 349 (P)
 Lightning, photographic technique (E), 1775
 Low intensity spectrum line, 1256 (P)
 Luminescent materials, using frequency response method of high speed spectrophotometry (E/T), 2762
 Molecular
 Conference, Brighton, 1810 (N)
 Conference, Liège, 10 (MR)
 Optical, inexpensive on-line computer system (E), 2183 (L)
 Photoelectric, with undispersed ultraviolet radiation (E), 605
 Photoelectron
 Session, New York City, 976 (MR)
 Symposium, University of Tennessee, 2407 (MR)
 Plasma, 874 (B)

Raman, laser, institute and workshop, 616 (N)

Shock Tube

Absorption technique for OH concentrations (E), 329

Flow by nanosecond exposures with Kerr-cell-shuttered f/1.5 stigmatic spectrograph (E), 259

Solid state, variable temperature (8-400 K) gas transfer cell (E), 777 (L)

Sparrow resolution limit and interferometer surface imperfections (T), 2326

Stellar, high dispersion with echelle grating (E), 2332

Vibrational, low frequency, conference, Versailles, 1951 (MR)

Sprays

Sauter mean droplet diameter determination (E), 2007

Standards

Laboratories, conference, National Bureau of Standards, 2608 (MR)

Luminous flux, U.S. unit changes, 1736 (N)

One-solar-constant irradiance (E), 1410

Radiation blackbody cavity, 2404 (P)

Volt, new legal value, 999 (N)

Standing Waves

In photoresists (T), 969 (L)

Star Sensors

Mariner spacecraft (R, E), 1056

Stencils

Production using polarized light, 764 (P)

Steradian

Conversion of measurements to visual angle, 412 (L)

Stereoscopy

Black and white television, 214 (P)

Camera, 1962 (P)

Cloud photographs, 1509 (P)

Photographic system, 160 (P)

Photomicrographic, 160 (P)

Silhouette holograms without vertical parallax (E), 2812 (L)

Three-dimensional picture projection, 2404 (P)

Viewing, wide-angle, 784 (P)

Strains

Analysis modulator, birefringent, 2210 (P)

Detection using diffraction gratings, 783 (P)

Stroboscope

Prism for, 985 (P)

Submillimeter Waves

Symposium, Polytechnic Institute of Brooklyn, 2215 (MR)

Sun (see also Eclipses)

Bemporad paper, solar irradiance measurements comment (E), 774 (L)

Catadioptric coronagraph design (T), 1131

Chromosphere, photon counting during eclipse (E), 2650

Color of the K corona (E), 2631

Corona, eclipse instrumentation (E), 2620

Electron corona photography optical system (E), 2620

Limb darkening in eclipse measured by photoelectric system (E), 2661

Irradiance at 11.58 km altitude (E), 346

Observations, photographic polarimeter (E), 1933 (L)

Surface Tension

Application of holographic interferometry to the static meniscus (E/T), 1639

Surfaces

Coating analysis by infrared, 999 (N)

Contours by Moiré pattern generation (E/T), 942

Film, residual, on fused quartz, effect of polishing on the roughness (E), 236 (L)

Ion beam erosion of rough glass (E), 173

Rough, light scattering by (T), 2470

Telephoto

Reversed with internal prism and wide-angle attachment, 984 (P)

Telescopes

Annular aperture enriched energy distribution calculations (T), 1874

Cassegrainian, with an afocal setting (E), 1718 (L)

Catadioptric coronagraph design (T), 1131

Concentric, meniscus for testing underwater lenses (T), 771

Day-night viewing gun sight, 172 (P)

Image selection device for use with (E), 2786 (L)

Image switching systems, 1957 (P)

Independent, use in aperture synthesis (T), 2501

Infrared eclipse, computer-controlled (E), 2653

Infrared, flying-spot (T/E), 2505

Mirror blank for Italian National Observatory, 1494 (N)

Paraboloidal array of spherical segments for direct detection optical receiver (T), 2798 (L)

Reflector, Mt. Hopkins, 1671 (N)

Testing of large system (T), 2497

Tilted-component theory (T), 2169

Ultraviolet, extreme, optical design of glancing incidence (T/E), 1019

Variable power, sight, 979 (P)

Television

Camera high aperture lens system, 172 (P)

Color, selections from JSMPTE, 2510 (N)

Color signal recorded on monochromatic film, 1962 (P)

Equalization of acoustooptic deflection cells in a laser color (E/T), 1176

Lighthouse intensity exposure, 160 (P)

Optics and electron optics in, (R, T), 2294

Optics and the Mariner imaging instrument (E), 277

Projection, new schlieren light valve (E/T), 2225

Projection system, 783 (P)

Scanned system, spatial and temporal analysis (T), 1906

Stereoscopic effect, 214 (P)

Systems, use for scientific measurements (E/T), 2565

Techniques for low light levels (R), 2230

Waveform analysis and microdensitometry as expression of observed landscape patterns on radar (E), 749

Temperature

Profile of an atmosphere by radiative transfer equation iterative solution (E/T), 1993

Symposium, Washington, D. C. 2547 (N)

Surface, recorder, 134 (N)

Testing, Nondestructive

Symposium, Chicago, 10 (MR)

Thermal Control Coatings

Solar absorptivity and thermal emissivity of aluminum coated with silicon oxide films (E), 339

Thermal Deformations

Solid mirror (T), 2481

Thermal Emission

Haze and clouds (T), 413

Thermal Expansion

Coefficient, ultraprecise measurement (E), 2477

Mirror deformation, optical effects (T), 2028

Thermal Imaging

Novel means (E), 761

Thermal Stability

Beryllium mirror measurement (E), 2691

Thermometers

In situ calibration of infrared (T), 513 (L); 1941 (L)

Thin Films

Absolute specular reflectance measurements of highly reflecting optical coatings at 10.6 μ (E), 85

Antireflection, from low index body, 1254 (P)

Fabry-Perot reflector design, for vacuum ultraviolet (T), 35

Interference passband filters with wide-angle lenses for multispectral photography (T), 2435

Light valve, 2820 (P)

Metal, Maxwell Garnett refractive indices model (T), 2579 (L)

Optical filter use, 2206 (B)

Optical properties of yttrium in high vacuum (E), 2115

Phenomena, 15 (B)

Reduction of polarization effects in interference coatings (T), 866

Silicon oxide, ultraviolet irradiated, change in thickness and other optical properties (E), 1577

Simulated space effects on properties (R), 2101

Solar absorptivity and thermal emissivity of aluminum coated with silicon oxide (E), 339

Spatial modulation in CdS (T), 1714 (L)

Support manufacture, 983 (P)

Three-layer broadband antireflection coatings for lithium niobate (E/T), 1490 (L)

Variable reflectance display device, 2821 (P)

Three-Dimensional Images

Computer generated holography, new approach (E/T), 471

Video transmission using varifocal mirrors (E/T), 2035

Tracking

Altitude attitude combined sensor, 2819 (P)

High altitude vapor releases, daytime optical instrumentation (E), 2066

Improved system for directing energy into system, 1962 (P)

Infrared horizon sensor, 1962 (P)

L-shaped rotating aperture, 1962 (P)

Laser for astronaut on the moon (T/E), 2256

Line-of-sight stabilization, 214 (P)

Local oscillator reference system (LORTS), 2405 (P)

Polarization for rotational motion, 172 (P)

Position determination for machine tool, 2821 (P)

Rotary motion detector, 2821 (P)

Star with Mangin mirror and field scanning device, 2405 (P)

Sun, using reciprocating lens, 760 (P)

Telescope, varifocal, 984 (P)

Transmission

Atmospheric and meteorological range (T/E), 1804

Hot H₂O and CO₂ radiation through cool intervening atmosphere (T/E) 2792 (L)

Infrared materials by scanned laser microscope (E), 802

Optical spatial filter of wide dynamic range in air-to-water optical (T/E), 507 (L)

Polarized far infrared radiation through metal light pipes (T/E), 971 (L)

Transmittance

Array of square openings (E/T), 2341

Gaussian beams in turbulent media (T), 125

Optical constants of plant leaves (E/T), 2573

Solar light radiation relations in plant canopies (T), 177

Triglycine Sulfide

Detector operated in pyroelectric mode (E), 1940 (L)

Turbulence

Atmospheric, investigation by narrow laser beams (T), 2543

Atmospheric phase jitter measurements for HeNe phase locked laser (E), 518 (L)

Clear air remote detection by infrared radiation (E/T), 1789

Compensation for atmospheric phase effects at 10.6 μ (E), 701

Gaussian beams in (T), 125

Optical processing of the phase correlation induced by, in laser beam (E/T), 962

Passive optical detection of meteorological parameters in launch vehicle environments (E), 1044

Reversing-front interferometer for phase-correlation measurements (E/G), 510 (L)

Signal-to-noise and spectral broadening in, structure measurement using a cw laser (E/T), 633

Tyndall, John

Biographical note, 1391 (N)

Ultraviolet

Carbon lamp, an intense line source at 1931 Å for photochemistry (E), 1711 (L)

Echelle efficiency measurement in (E), 1227 (L)

Extreme

Calibration changes in solar satellite instruments (E, R), 1201, 1697

Diffraction filters in spectroscopy (T/E), 447

Gas discharge lamp (E), 1155

Optical design of glancing incidence telescopes (T/E), 1019

Photoelectric spectroscopy with undispersed radiation (E), 605

Solar-blind photoelectric detection system for satellite applications (E), 581

Spectrometer for observations of the solar, from the OSO-1 satellite (E), 1006

Filter designed for the OI 1300-Å triplet detection (E/T), 1492 (L)

Holography with recording in dichromated gelatin (E), 2186 (L)

Illuminator, focal isolation lens (E/T), 477

Photomultiplier yield of channel electron multiplier in the 304-1493-Å wavelength range (E), 505 (L)

Polarizers, 979 (P)

Protection of organic materials, 719 (P)
 Radiation produced from longer wavelengths, 160 (P)
 Silicon photodiode detector, 2208 (P)
 Spectral radiance of the horizon sky measurement (E), 1574
 Vacuum
 Fabry-Perot reflectors design for (T), 35
 Fluorescent integrating sphere for (T/E), 451
 Interferometer suitable for (T/E), 31
 Plasma arc radiation source for the 300-1000-Å wavelength region (E), 41
 Radiation physics conference, Tokyo, 2547 (N)
 Spectrometer, computer controlled step scanning, for beam foil spectroscopy (E), 929

Vacuum

Congress proceedings, 1247 (B)

Velocity

Fluid, laser beam use, 784 (P)
 Holographic measurement (E/T), 2073
 Hyper- particles, synchronized fourier transform hologram camera system (E/T), 1105
 Laser doppler systems (E/T), 1026; (E), 2393 (L)

Vibration Analysis

Holographic technique for determining the phase of objects (E/T), 1357
 Measurement by holography (E/T), 2066
 Scanning technique for storing of whole vibration cycles on one hologram (E), 1216 (L)

Viewers

Infinite optical image-former, 171 (P)

Viewfinder

Airborne means with fiber optics, 1962 (P)
 Coordinate, for camera, 1961 (P)
 Galilean, with scale, 979 (P)
 Reversed Galilean, 985 (P)

Visibility

Underwater, effects of particle size on contrast improvement by polarization discrimination of targets (E, R), 421; (T), 1932

Vision (see also Eyes)

Conference, Ohio State, 1992 (N)

Disorders and, 39 (B)
 Impaired, person characteristics in U.S., 153 (N)
 Oculometer to trace eye movements of pilots, 2402 (N)
 Protection against glare from night driving (T/E), 2176 (L)
 Week at Ohio State University, 2218 (N)

Visual Angle

Conversion of steradian measurement to, 412 (L)

Water

Content in paper by infrared, 1741 (P)

Waveguides

Analysis of refractive index distributions in cylindrical, graded index glass rods used as image relays (T), 753
 Isotropic slab, propagation constants of resonant waves (T), 2444
 Optical, using cylindrical mirrors (T/E), 2377

X-Rays

Analysis, applications conference, Denver, 694 (N)
 Diffraction, tables, 134 (N)
 Diffractometer, 980 (P)
 Flash, courses by Photo Data, 276 (N)
 Inelastic scattering for fog density measurement, 984 (P)
 Optical design of glancing incidence telescope (T/E), 1019
 Optics and microanalysis, 2207 (B)
 Spectrochemical analysis, 2613 (B)
 Spectrometer, 984 (P)
 Theory of, and thermal neutron scattering by real crystals, 1241 (B)
 Three-dimensional display and, images by means of holography (E), 775 (L)

Xerography (see also Electrophotography)

Dyed image, 349 (P)

Yttrium

Optical properties of thin films in high vacuum (E), 2115

Zone Plates

White light interference demonstration on two spaced parallel (E), 1722 (L)

Author Index to Volume 9

Prepared by Vance Weaver Composition, Inc.

- Abhyankar, K. D. (see Fymat, A. L.)—1075
- Abramson, Nils. The Holo-Diagram. II: A Practical Device for Information Retrieval in Hologram Interferometry—97
- . The Holo-Diagram. III: A Practical Device for Predicting Fringe Patterns in Hologram Interferometry—2311
- Adams, L. A. (see Montgomery, D. R.)—277
- Affleck, J. H. Symposium on Silicon Processing, National Bureau of Standards, 2-3 June 1970—2216(MR)
- Ageno, H. Y. (see Hall, F. F., Jr.)—1820
- Akimoto, H. (see Washida, N.)—1711(L)
- Alexander, T. M. (see Meyer-Arendt, J. R.)—2176(L)
- Allemand, C. D. Design Criteria for a Raman Spectrometer—1304
- Allen, J. B. (see Meadows, D. M.)—942
- Allen, L. B. (see Jackson, J. E.)—2798(L)
- Allen, W. A. (see Gausman, H. W.)—545
- , H. W. Gausman, A. J. Richardson, and C. L. Wiegand. Mean Effective Optical Constants of Thirteen Kinds of Plant Leaves—2573
- Allison, L. J. (see Kreins, E. R.)—681
- Alloucherie, Y. J. Light Conversion Efficiency of Calcium Tungstate Using a Light Intensifier Tube—1403
- Aloway, J., C. B. Moore, and B. Vonnegut. Cameras for Time-Lapse Photography—1811
- Altman, J. H. (see Schmitt, H. C., Jr.)—871
- Ammann, E. O. Three-Dimensional Vector Diagrams as an Aid in Analyzing Optical Devices and Systems—1683
- Ammon, G. and S. Russell. A Laser Tracking and Ranging System—2256
- Annable, R. V. Radiant Cooling—185
- Ansley, D. A. Techniques for Pulsed Laser Holography of People—815
- . Resolution Testing of Coherent Optical Systems by Means of Linear Gratings—2746
- Anzai, S. (see Tsuruta, T.)—2802(L)
- Arnaud, J. A. Degenerate Optical Cavities. III: Effect of Aberrations—1192
- and J. T. Ruscio. Focusing and Deflection of Optical Beams by Cylindrical Mirrors—2377
- Arnold, C. B. (see Simmons, F. S.)—2792(L)
- Arnold, J. R. (see Metzger, A. E.)—1289
- Artman, J. O. (see Heinz, R. A.)—2161
- Ashley, E. J. (see Koehler, W. F.)—2801(L)
- Asmus, J. F. (see Palmer, A. J.)—227(L)
- Asheimer, R. W. The Remote Detection of Clear Air Turbulence by Infrared Radiation—1789
- Aspnes, D. E. Comments on the Determination of the Absolute Alignment of a Polarizer—1708(L)
- Austin, R. W. (see Smith, R. C.)—2015
- Avizonis, P. V. (see Holmes, D. A.)—2179(L)
- Bader, M. and C. B. Wagoner. NASA Program of Airborne Optical Observations—265
- Baird, E. D. A Special Interferometer for Testing Long Laser Rods—465
- . An Interferometric Method for Measuring the Parallelism of Laser Rod Faces—1945(L)
- Baldwin, R. E. (see Blackmer, L. L.)—2753
- Ball, L. M. Comment on Solar Irradiance Measurements—774(L)
- Ballard, S. S. Optical Activities in the Universities—2203, 2606
- Balliett, J. W. (see Munnerlyn, C. R.)—2535
- Bandeem, W. R. (see Brennan, B.)—405
- Barbrow, L. E. Photometric Standards and the Unit of Light. O. C. Jones and J. S. Preston—Book Review by L. E. Barbrow. 1245(B)
- Barchewitz, P. (see Farreng, R.)—1587
- Barker, G. C. (see Booth, B. L.)—107
- Barnhardt, E. A. and J. L. Streete. A Method for Predicting Atmospheric Aerosol Scattering Coefficients in the Infrared—1337
- Barry, J. R. (see Moos, H. W.)—601
- Bartels, P. H. and J. Bellamy. Self-Optimizing, Self-Learning System in Pictorial Pattern Recognition—2453
- Bartera, R. E., H. N. Riise, and C. G. Miller. Solar Simulators at the Jet Propulsion Laboratory—1068
- Bartolini, R., W. Hannan, D. Karlsons, and M. Lurie. Embossed Hologram Motion Pictures for Television Playback—2283
- Bartolotta, C. (see Pernick, B. J.)—1902
- Baskett, J. R. and I. D. Liu. Anamorphic Condensing Optics for a Slitless Spectrograph—49
- Bates, B. (see Thetford, A.)—35
- Batt, R. J. and C. H. B. Mee. A Photoelectric Technique for the Study of Adsorption: the Aluminum-Oxygen and Aluminum-Water Systems—79
- Baumeister, P. (see Gelber, R.)—863
- Bean, Charles P. Francis Bitter, Selected Papers and Commentaries. Edited by T. Erber and C. M. Fowler—Book Review by Charles P. Bean—1243(B)
- Beauchamp, H. L. (see Lin, L. H.)—2088
- Beaven, G. H. Luminescence of Biopolymers and Cells, by G. M. Barenboim, A. N. Domanskii, and K. K. Turoverov; translation editor, Raymond F. Chen—Book Review by G. H. Beaven—1965(B)
- Bechthold, G. (see Lipsett, F. R.)—1312
- Beck, J. W. Noise Considerations of Optical Beam Recording—2559

- Beckers, J. M.** Narrow Band Filters Based on Magneto-optical Effects—595
- and **W. J. Wagner.** A Photographic Polarimeter for Solar Observations—1933(L)
- Beesley, M. J. and J. G. Castledine.** The Use of Photoresist as a Holographic Recording Medium—2720
- Behring, W. E.** A Spectrometer for Observations of the Solar Extreme Ultraviolet from The OSO-1 Satellite—1006
- Bell, R. J. and H. V. Romero.** A Study of Array of Square Openings—2341
- , **H. V. Romero, and J. M. Blea.** Theory and Experiments for Multielement Grid Filters in a Dielectric—2350
- Bellamy, J.** (see Bartels, P. H.)—2453
- Benesch, W. M.** (see Saum, K. A.)—1419
- Bennett, J. M. and R. J. King.** Effect of Polishing Technique on the Roughness and Residual Surface Film on Fused Quartz Optical Flats—236(L)
- , A Critical Evaluation of Rhomb-Type Quarter-wave Retarders—2123
- Benton, S. A. and H. S. Mingace, Jr.** Silhouette Holograms Without Vertical Parallax—2812(L)
- Ben-Yosef, N. and A. G. Rubin.** A Static Model for the Nanolight Discharge—1698
- Berdahl, C. M.** (see Kendall, J. M., Sr.)—1082
- Berens, A. S. C. and R. A. Welter.** Automatic Testing of Electrooptical Systems—2298
- Berg, W. F.** Correction to: The Photographic Emulsion Layer as a Three-Dimensional Recording Medium—1943(L)
- Berry, D. H.** (see King, M. C.)—471
- , (see King, M. C.)—2035
- Berthold, J. W., III.** Three-Layer Broadband Antireflection Coatings for Lithium Niobate—1490(L)
- , (see Jacobs, S. F.)—2477
- Bertolotti, M., M. Carnevale, L. Muzii, and D. Sette.** Reversing-Front Interferometer for Phase-Correlation Measurements in the Turbulent Atmosphere—510(L)
- , **M. Carnevale, B. Daino, and D. Sette.** Optical Processing of the Phase Correlation Induced by a Turbulent Medium in a Laser Beam—962
- Best, G. T.** Optical Instrumentation for Tracking High Altitude Vapor Releases by Day—2666
- Beswick, J. A., L. H. Saintout, and J. F. Westerkamp.** On Field Reversal Signals of an Optically Pumped Sample—1937(L)
- Beyer, L. M.** (see Bridwell, L.)—929
- Bhatnagar, G. S.** (see Singh, K.)—2236
- Biemann, K.** Organic Analysis—1282
- Billings, D. E.** Color of the K Corona—2631
- Billingsley, F. C.** Applications of Digital Image Processing—289
- Billman, K. W.** (see Leonard, E. T.)—1209(L)
- Billmeyer, F. W., Jr. and H. R. Carlon.** Estimation of Refractive Indices by a Spectrophotometric Method—501(L)
- Birnbaum, G.** (see Silvera, I. F.)—617
- Black, J. F.** (see Sherman, B.)—802
- Blackmer, L. L., A. P. VanKerhove, R. E. Baldwin, and K. F. Stultz.** Some Aspects of Multiple-Beam Interference Techniques in Digital Data Recording—2753
- Blackwell, D. E.** (see Collins, B. S.)—1606
- Blaine, L. R.** (see Hovis, W. A., Jr.)—561
- Blair, F. D.** (see Lipsett, F. R.)—1312
- Blau, H. H., Jr., M. L. Cohen, L. B. Lapson, P. von Thüna, R. T. Ryan, and D. Watson.** A Prototype Cloud Physics Laser Nephelometer—1798
- , **D. J. McCleese, and D. Watson.** Scattering by Individual Transparent Spheres—2522
- Blea, J. M.** (see Bell, R. J.)—2350
- Bliss, F. E., S. Davis, and B. Stein.** Isothermal Cavity, Blackbody Radiation Source—2023
- Blitzstein, W., H. F. Fliegel, and Y. Kondo.** The Wavelength Dependence of Atmospheric Extinction—2539
- Bloom, G. H.** Using a Pentaprism for Laser Alignment—1210(L)
- Bloxson, J. T. and J. B. Schroeder.** Preparation of Optical Surfaces on Beryllium—539
- Boersch, H., H. Eichler, and W. Wiesemann.** Measurement of Length Shifts down to 10^{-3} Å with a Two-Mode Laser—645
- Boiteux, M. and O. de Witte.** A Transverse Flow Repetitive Dye Laser—514(L)
- Bombach, J. L.** Exploding Wires, Volume 4. Edited by W. G. Chace and H. K. Moore—Book Review by J. L. Bombach. 15(B)
- Bonham, T. E.** (see Jackson, J. E.)—2798(L)
- Booth, B. L., S. M. Jarrett, and G. C. Barker.** Holograms Made with Pulsed Argon-Ion Lasers Operating in Various Transverse Modes—107
- Borucki, W. J.** Kerr-Cell-Shuttered f/1.5 Stigmatic Spectrograph for Nanosecond Exposures—259
- Boudreau, R. D. and G. A. Franceschini.** In Situ Calibration of Infrared Thermometers—513(L)
- and **G. A. Franceschini.** Correction to: In Situ Calibration of Infrared Thermometers—1941(L)
- Bradac, F. J.** (see Heinisch, R. P.)—483
- Bradford, A. P., G. Hass, J. B. Heaney, and J. J. Triolo.** Solar Absorptivity and Thermal Emissivity of Aluminium Coated with Silicon Oxide Films Prepared by Evaporation of Silicon Monoxide—339
- Bradford, J. N.** (see Jacobs, S. F.)—2477
- Bradley, G. M.** (see Pickett, H. M.)—2397(L)
- Brandenberg, W. M.** Fluorescent Integrating Sphere for the Vacuum Ultraviolet—451
- Brandes, R. G., F. P. Laming, and A. D. Pearson.**

- Optically Formed Dielectric Gratings in Thick Films of Arsenic-Sulfur Glass—1712(L)
- Brandt, G. B.** Coherent Optical Power Spectra of Photographic Materials—1424
- and **A. K. Rigler.** Lense Response to Extended Sources—2554
- Brannen, E.** (see Lit, J. W.)—235(L)
- Brasch, J. W.** (see Melveger, A. J.)—11
- Braun, W. C.** The Effects of Diffraction on the Field of View of an Optical Instrument—1862
- Brennan, B. and W. R. Banneen.** Anisotropic Reflectance Characteristics of Natural Earth Surfaces—405
- Bridges, T. J.** (see Ulrich, R.)—2511
- Bridwell, L., W. E. Maddox, L. M. Beyer, and R. C. Etherton.** A Computer Controlled Step-Scanning Vacuum Ultraviolet Spectrometer for Beam Foil Spectroscopy—929
- Briggs, D.** (see Lansford, T. G.)—412
- Brooks, D. R.** (see Kogelschatz, U.)—494(L)
- Brown, G. M.** (see Neumann, D. B.)—1357
- Brown, R. M.** A Variable Beam Splitter for Lasers—1726(L)
- Brown, R. T.** Perspective Drawing by Computer—1223(L)
- Bruce, C. F. and R. M. Duffy.** Interferometric Techniques for Measuring Dimensional Stability of Passive Etalons—743
- Brundle, C. R.** International Symposium on Photoelectron Spectroscopy, 14-15 May, University of Tennessee—2407(MR)
- Bruning, J. H. and D. R. Herriott.** A Versatile Laser Interferometer—2180(L)
- Brusic, V., M. A. Genshaw, and B. D. Cahan.** The Application of Intensity Transients in Ellipsometry—1634
- Bryngdahl, O. and A. Lohmann.** Variable Magnification in Incoherent Holography—231(L)
- Büchl, K.** Focus Detector as an Aid for Focusing a Laser on a Target—113
- Buchele, D. R.** Optics at Lewis Research Center—399
- Buchroeder, R. A.** Tilted-Component Telescopes. Part I: Theory—2169
- Buckley, J. L.** (see Moos, H. W.)—601
- Buczek, C. J.** (see Kurtin, S. L.)—1848
- Buften, J. L. and S. C. Cohen.** Fourier Spectrum of a Chopped Bivariate Normal Intensity Distribution—381
- Burckhardt, C. B.** Use of a Random Phase Mask for the Recording of Fourier Transform Holograms of Data Masks—695
- A Simplification of Lee's Method of Generating Holograms by Computer—1949(L)
- A Simplification of Lee's Method of Generating Holograms. 2: Erratum—2813(L)
- Burke, J. J.** Propagation Constants of Resonant Waves on Homogeneous, Isotropic Slab Waveguides—2444
- Burnham, D. C.** Laser Beam Photography by a Multiple Beam Technique—1482(L)
- Simple Measurement of Thermal Lensing Effects in Laser Rods—1727(L)
- Electronic Averaging of One-Dimensional Television Pictures—2565
- Burns, J. and W. T. Powers.** Detailed Photocathode Stability in the Image Orthicon—1719(L)
- (see Powers, W. T.)—2172
- Burton, W. M. and N. K. Reay.** Echelle Efficiency Measurements in the Ultraviolet—1227(L)
- Butler, N. R.** Observation of Pseudo-Half Orders in a Double-Pass Ebert Monochromator—1475(L)
- Byer, R. L. and R. L. Herbst.** Constant Dispersion Rotating Grating Q-Switch for a CO₂ Laser—2808(L)
- Cahan, B. D.** (see Brusic, V.)—1634
- Cairns, F. V.** (see Lipsett, F. R.)—1312
- Cairns, R. B., H. Harrison, and R. I. Schoen.** Photoelectric Spectroscopy with Undispersed Ultraviolet Radiation—605
- Capelle, G. and D. Phillips.** Pumping Organic Dyes with a Nitrogen Laser—517(L)
- and **D. Phillips.** The Tuned Nitrogen Laser Pumped Dye-Laser—742
- Cardenas, R.** (see Gausman, H. W.)—545
- Carlson, H. R.** (see Billmeyer, F. W., Jr.)—501(L)
- Infrared Emission by Fine Water Aerosols and Fogs—2000
- Carlson, R. P.** (see Eguchi, R. G.)—687
- Carlson, T. A.** Photoelectron Spectroscopy Session, 1969 Eastern Analytical Symposium, New York City, 19-21 November 1969—976(MR)
- Carnevale, M.** (see Bertolotti, M.)—510(L)
- (see Bertolotti, M.)—962
- Castledine, J. G.** (see Beesley, M. J.)—2720
- Cathey, W. T., C. L. Hayes, W. C. Davis, and V. F. Pizzurro.** Compensation for Atmospheric Phase Effects at 10.6 μ —701
- Phase Holograms, Phase-Only Holograms, and Kinoforms—1478(L)
- Caulfield, H. J.** (see McMahon, D. H.)—91
- Wavefront Multiplexing by Holography—1218(L)
- Spatially Randomized Data Masks for Holographic Storage—2587(L)
- Chaney, L.** (see Hanel, R. A.)—1767
- Chang, M. and N. George.** Holographic Dielectric Grating: Theory and Practice—713
- Chau, H. M.** A Full-View Holographic System—1479(L)
- Demonstration of White-Light Interference on Two Spaced Parallel Zone Plates—1722(L)
- Chesler, R. B.** A Stabilizing Sleeve for the Nd:YAIG Laser—2190(L)
- Cho, F. Y.** (see Lawson, R. L.)—2805(L)
- Chopra, K. N.** (see Katti, P. K.)—1379

- Clair, J. J., M. Françon, J. Kvapil, and P. K. Mondal.** Generation of Periodic Amplitude and Phase Filters—2585(L)
- Clark, F. D.** (see Hanel, R. A.)—1767
- Clark, J. C. and T. J. Davies.** Stimulated Emission from Organic Dye Solutions Pumped by a Small Coaxial N₂ Laser—1725(L)
- Clark, Peter O.** Laser Kinetics. V. S. Mashkevich—Book Review by Peter O. Clark. 1244(B)
- Close, D. H.** (see McClung, F. J.)—103
- Cocks, George C.** The Microscope Past and Present. S. Bradbury—Book Review by George C. Cocks—33(B)
- Cohen, M. L.** (see Blau, H. H., Jr.)—1798
- Cohen, S. C.** (see Bufton, J. L.)—381
- Cohoon, R. L.** (see Foster, L. C.)—2154
- Cole, A. R. H., A. A. Green, G. A. Osborne, and G. D. Reece.** Vacuum Grating Spectrometer for the Mid and Far Infrared—23
- Collier, R. J. and C. J. Koester.** Information Processing, Holography and Coherence Technical Group—1039
- Collins, B. S., A. D. Petford, and D. E. Blackwell.** A 0.2-MW Furnace for Spectroscopic Studies—1606
- Collins, J. H.** Prospects for Visible Radiation from Electroluminescent Devices, Panel at the 3rd Solid State Devices Conference, Exeter, 16-19 September 1969—2406(MR)
- Collins, S. A., Jr.** (see Rose, H. W.)—2394(L)
- Collis, R. T. H.** Lidar—1782
- Consortini, A. and L. Ronchi.** Gaussian Beams in Turbulent Media—125
- , **L. Ronchi, and L. Stefanutti.** Investigation of Atmospheric Turbulence by Narrow Laser Beams—2543
- Cooke, F. N., Jr.** (see Hirschberg, J. G.)—2807(L)
- Cooke, Frank.** Optical Activities in Industry—412, 728, 779, 993, 1247
- Cornejo, A.** (see Malacara, D.)—837
- and **D. Malacara.** Ronchi Test of Aspherical Surfaces, Analysis, and Accuracy—1897
- Cosentino, L. S.** (see Stewart, W. C.)—2271
- Costich, V. R.** Reduction of Polarization Effects in Interference Coatings—866
- Crabb, T. A.** Organic Magnetic Resonance. An International Journal, Editor-in-Chief: E. F. Mooney—Book Review by T. A. Crabb—1963(B)
- Craig, C. D. and J. C. Rose.** Simplified Derivation of the Properties of the Optical Center of a Corner Cube—974(L)
- Craven, P. D.** (see Gary, G. A.)—2787(L)
- Crumby, K. H.** Optics at Langley Research Center—317
- Crumly, C. B.** (see Foster, L. C.)—2154
- Cuff, K. F.** (see Washwell, E. R.)—1911
- Curcio, J. A.** (see Knestrick, G. L.)—1574
- Curran, R. K. and T. A. Shankoff.** The Mechanism of Hologram Formation in Dichromated Gelatin—1651
- Daehler, M. A.** Twelve-Channel Multiple-Interferometer Fabry-Perot Spectrometer—2529
- Daino, B.** (see Bertolotti, M.)—962
- Dalisa, A. L.** (see DeBitetto, D. J.)—2588(L)
- Dave, J. V. and J. Gazdag.** A Modified Fourier Transform Method for Multiple Scattering Calculations in a Plane Parallel Mie Atmosphere—1457
- , **Coefficients of the Legendre and Fourier Series for the Scattering Functions of Spherical Particles—1888**
- , **Intensity and Polarization of the Radiation Emerging from a Plane-Parallel Atmosphere Containing Monodispersed Aerosols—2673**
- Davies, J. M., P. H. Peter, and R. J. Goff.** An Absorbing Surface for Measuring Intense Thermal Radiation—1473(L)
- Davies, M. E.** (See Murray, B. C.)—1270
- Davies, T. J.** (see Clark, J. C.)—1725(L)
- Davis, S.** (see Bliss, F. E.)—2023
- Davis, W. C.** (see Cathey, W. T.)—701
- , (see Lotsch, H. K. V.)—2725
- Davis, W. L.** (see Stewart, D. R.)—938
- Day, G. W. and P. M. Gruzensky.** Some Optical Properties of Cesium Cupric Chloride—2794(L)
- Day, R. A.** A New Interferometer Suitable for the Vacuum Ultraviolet—31
- , **Deconvolution of Fabry-Perot Profiles—1213(L)**
- DeAcetis, L. A. and I. Lazar.** Single Strip Diffraction: Comparison Between Kirchoff Theory and Keller's Geometrical Theory in the Limit of Small Glancing Angle and Width—1691
- DeBell, M. A.** (see McKenney, D. B.)—2579(L)
- De Biase, G. A.** Photoelectric System for Extreme Solar Limb Darkening Observation in Different Wavelengths with High Resolution Time—2661
- DeBitetto, D. J.** On the Intensifying Property of a Pile-of-Gratings—59
- , **A Front-Lighted 3-D Holographic Movie—498(L)**
- and **A. L. Dalisa.** Holographic Image Intensification by Superposition of Holograms—2588(L)
- Decker, J. A., Jr.** Hadamard-Transform Image Scanning—1392
- Deeds, W. E.** (see Simpson, W. A.)—499(L)
- Deepak, A. and A. E. S. Green.** Second and Higher Order Scattering of Light in a Settling Polydisperse Aerosol—2362
- Degnan, J. J.** (see Ramsay, I. A.)—385
- de Graauw, Th. and B. P. Th. Veltman.** Pseudo-Random Binary Sequences for Multiplex Codes—2658
- Deirmendjian, D.** The Scattering of Light and Other Electromagnetic Radiation, by Milton Kerker—Book Review by D. Deirmendjian—2206(B)
- Delange, O. E.** Some Optical Communications Experiments—1167
- de Metz, J.** Sensitométrie infrarouge ultra-rapide—1481(L)

- Demma, F. J., J. H. Michels, and W. E. Wolf.** Doppler Bandwidth of a Rotating and Translating Cylinder Using Unfocused $10.6\ \mu$ Radiation—2788(L)
- Dereniak, E. L. and L. Wolfe.** A Comparison of the Theoretical Operation of High-Impedance and Low-Impedance Detectors—2441
- Derr, V. E. and C. G. Little.** A Comparison of Remote Sensing of the Clear Atmosphere by Optical, Radio, and Acoustic Radar Techniques—1976
- DeShazer, L. G.** (see Huff, L.)—233(L)
- De Vany, A. S.** Supplement to: Some Aspects of Interferometer Testing and Optical Figuring—1219(L)
- . Quasi-Ronchigrams as Mirror Transitive Images of Shearing Interferograms—1477(L)
- . Supplement to: Aberration Analysis by Double Wire Testing—1720(L)
- . Quasi-Ronchigrams as Mirror Transitive Images of Interferograms—1944(L)
- de Wit, C. T.** (see Idso, S. B.)—177
- de Witte, O.** (see Boiteux, M.)—514(L)
- Dezenberg, G. J., E. L. Roy, and J. A. Merritt.** Properties of a 15-cm i.d. Multipath CO_2 Laser Amplifier and Oscillator—516(L)
- Dhir, S. K. and H. A. Peterson.** Dual Real Images from Holograms of Transparent Objects—1216(L)
- Dickson, L. D.** Characteristics of a Propagating Gaussian Beam—1854
- Dieck, R. H. and R. L. Roberts.** The Determination of the Sauter Mean Droplet Diameter in Fuel Nozzle Sprays—2007
- Diennes, Andrew.** Quantum Electronics, by V. M. Fain and Ya. I. Khanin—Book Review by Andrew Diennes—2206(B)
- Dignam, M. J. and M. Moskovits.** Azimuthal Misalignment and Surface Anisotropy as Sources of Error in Ellipsometry—1868
- Dimeff, J.** The Role of Optics in Research at Ames Research Center—245
- Dimmock, J. O.** Symposium on Magnetic Semiconductors, Yorktown Heights, 13-14 November 1969—438(MR)
- Dinner, Paul.** INTER/MICRO-70, 29 June—2 July 1970, Chicago—2611(MR)
- Dobrov, W. I. and E. R. Washwell.** CO_2 Laser Pumping by a dc-Tesla Coil Combination—1485(L)
- Dobrowolski, J. A.** Optical Interference Filters for the Adjustment of Spectral Response and Spectral Power Distribution—1396
- . Thin-Film Optical Filters, by H. A. Macleod—Book Review by J. A. Dobrowolski—2206(B)
- Dohi, T. and T. Suzuki.** Interferometric Spectroscopy Using a Beat Technique—2182(L)
- Doi, K. and A. Toshinai.** Frequency Response Method of High Speed Spectrophotometry for Luminescent Materials—2762
- Doonan, D. D.** (see Martens, A. E.)—1930(L)
- Dozier, C. M.** The Photographic Action of Ionizing Radiations. R. H. Herz—Book Review by C. M. Dozier—1245(B)
- Dueker, J. E.** (see Reinheimer, C. J.)—2059
- Duffy, R. M.** (see Bruce, C. F.)—743
- Duncan, C. H.** (see Webb, J. J.)—345
- Duncan, R. C., Jr., B. W. Faughnan, and W. Phillips.** Inorganic Photochromic and Cathodochromic Recording Materials—2236
- Dunkelman, L. and F. W. Paul.** Optics at Goddard Space Flight Center—1003
- Dvorin, M.** Associate in Applied Science Technician—The Answer to the Missing-Middle?—Problems and Solutions—895
- Dyes, W. A., P. F. Kellen, and E. C. Klaubert.** Velocity Synchronized Fourier Transform Hologram Camera System—1105
- Eby, J. E.** A Computer Based Spectroradiometer System—888
- Eddy, J. A., R. H. Lee, P. J. Léna, and R. M. MacQueen.** Far Infrared Airborne Spectroscopy—439
- Edinger, J. R.** (see Lauroesch, T. J.)—875
- Edwin, R. P.** (see Pfitzer, E. K.)—512(L)
- Eguchi, R. G. and F. P. Carlson.** Linear Vector Operations in Coherent Optical Data Processing Systems—687
- Eichler, H.** (see Boersch, H.)—645
- Eisner, M.** (see Kattawar, G. W.)—2685
- Elterman, L.** Relationships Between Vertical Attenuation and Surface Meteorological Range—1804
- Elterman, P.** Integrating Cavity Spectroscopy—2140
- Ely, R. and T. K. McCubbin, Jr.** The Temperature Dependence of the Self-Broadened Half-Width of the P-20 Line in the 001-100 Band of the CO_2 —1230(L)
- Ellis, R. E.** (see Schurin, B.)—223(L)
- Eng, S. T. and R. A. Gudmundsen.** Theory of Optical Heterodyne Detection Using the Pyroelectric Effect—161
- Eppers, William C., Jr.** Gas Laser Technology, by Douglas C. Sinclair and W. Earl Bell—Book Review by William C. Eppers, Jr.—1963(B)
- Etherton, R. C.** (see Bridwell, L.)—929
- Eyer, James A.** The Focal Encyclopedia of Photography (Revised Desk Edition)—Book Review by James A. Eyer. 34(B)
- Farhat, N. H. and B. J. Levin.** Image Dissection and Conversion at Nonvisible Wavelengths—765
- Farrenq, R., F. Meyer-Bourbonneux, P. Pinson, C. Meyer, et P. Barchewitz.** Etalonnage absolu d'un spectrometre SISAM—1587
- Fassel, V. A.** (see Reif, I.)—2398(L)
- Faughnan, B. W.** (see Duncan, R. C., Jr.)—2236
- Faulhaber, M. E.** (see Witherell, P. G.)—73
- Feichtner, J. D., R. Johannes, and G. W. Roland.** Growth and Optical Properties of Single Crystal Pyargyrite (Ag_3SbS_3)—1716(L)

- Feofilov, P. P.** Physics of Color Centers. W. Beall Fowler—Book Review by P. P. Feofilov. 1240(B)
- . Spectra and Energy Levels of Rare Earth Ions in Crystals. G. H. Diecke—Book Review by P. P. Feofilov. 1241(B)
- Fernald, D. L.** (see Menzel, D. H.)—2648
- Ferrara, R., G. Fiocco, and G. Tonna.** Evolution of the Fog Droplet Size Distribution Observed by Laser Scattering—2517
- Ferraro, J. R., C. Postmus, S. S. Mitra, and C. J. Hoskins.** Pressure Dependence of the Infrared-Active Phonons in the Mixed Crystal System $KCl_{1-x}Br_x$ —5
- Fine, T.** (see Harwit, M.)—1149
- Fiocco, G.** (see Ferrara, R.)—2517
- Firester, A. H.** Upconversion: Imaging with Planar and Spherical Pump Beams—2266
- Fischer, H.** (see Schönbach, K.)—1695
- Fisher, R. R.** A Catadioptric Coronagraph Design—1131
- Fleischer, H.** National Conference of Standards Laboratories, 15-17 June 1970, Natural Bureau of Standards—2608(MR)
- Fliegel, H. F.** (see Blitzstein, W.)—2539
- Forman, M. L.** (see Hovis, W. A., Jr.)—561
- Forsyth, J. M.** SPIE Seminar-in-Depth on Developments in Laser Technology, Rochester, 17-18 November 1969—1238(MR)
- Fort, B.** Studies of Coronal Lines with Electronic Cameras During the Eclipse of 7 March 1970—2643
- Foster, L. C., C. B. Crumly, and R. L. Cohoon.** A High-Resolution Linear Optical Scanner Using a Traveling-Wave Acoustic Lens—2154
- Franceschini, G. A.** (see Boudreau, R. D.)—513(L)
- . (see Boudreau, R. D.)—1941(L)
- Françon, M.** (see Clair, J. J.)—2585(L)
- Fricke, W. C.** Fundamental Mode YAG:Nd Laser Analysis—2045
- Fried, D. L.** (see Shaffer, J. J.)—933
- and **R. G. Turner.** Focusing Through a Flat Plate; Dependence of Aberration on the Refractive Index—2800(L)
- Fried, W. I.** (see Hirschberg, J. G.)—1137
- Frieden, B. Roy.** The Extrapolating Pupil, Image Synthesis, and Some Thought Applications—2489
- Friesem, A. A. and J. L. Walker.** Thick Absorption Recording Media in Holography—201
- Fromm, D.** Spectral Radiance Between $0.42\ \mu$ and $1.1\ \mu$ of Rubidium and Cesium Vapor Arc Lamps as a Function of Power Input and Pressure—913
- Fryer, P. A.** A Scanning Technique for Allowing Whole Vibration Cycles to be Stored on One Hologram—1216(L)
- Fulmer, G. G.** (see Lauroesch, T. J.)—875
- Funkhouser, A. T. and K. D. Mielenz.** High-Speed Holographic Interferometry—1215(L)
- Fymat, A. L. and K. D. Abhyankar.** An Interferometric Approach to the Measurement of Optical Polarization—1075
- Gabel, R. A. and B. Liu.** Minimization of Reconstruction Errors with Computer Generated Binary Holograms—1180
- Gaffard, J. P.** Cassegrainian Telescope with an Afocal Setting—1718(L)
- Gagne, G.** (see Holland, A. C.)—1113
- Gallo, C. F.** Theoretical Analysis of the Behavior of Hg + Tl Arc Lamps with Variable Mercury Loadings—2711
- Gandrud, W. B.** Calorimetric Measurement of Infrared Absorption in Crystals of Unknown Specific Heat—1936(L)
- Gary, G. A. and P. D. Craven.** A Note on the Scattering Geometry from Infinite Cylinders—2787(L)
- , **W. A. Allen, R. Cardenas, and A. J. Richardson.** Relation of Light Reflectance to Histological and Physical Evaluations of Cotton Leaf Maturity—545
- Gausman, H. W.** (see Allen, W. A.)—2573
- Gazdag, J.** (see Dave, J. V.)—1457
- Gebbie, H. A.** PIB Symposium on Submillimeter Waves, Brooklyn, 31 March-2 April 1970—2215(MR)
- Gelber, R. and P. Baumeister.** The Control of Absorbance of a Multilayer—863
- Genshaw, M. A.** (see Brusic, V.)—1634
- George, N.** (see Chang, M.)—713
- George, W. O.** Correlation of Infrared and Raman Spectra of Organic Compounds. Herman A. Szymanski—Book Review by W. O. George. 874(B)
- Gerritsen, H. J., W. W. Millbrandt, and R. L. Omega.** A Michelson Interferometer for Use in Measuring Characteristics of Phonographic Cartridges—1231(L)
- . (see Wardle, M. W.)—1639
- Gilbert, G. D.** The Effects of Particle Size on Contrast Improvement by Polarization Discrimination for Underwater Targets—421
- Gildea, J.** Low Light Level TV Techniques—2230
- Girard, A. et M. P. Lemaitre.** Profils experimentaux de l'horizon infrarouge de la terre—903
- Givens, M. P.** (see Wyant, J. C.)—810
- Glass, A. M.** An Introduction to Nonlinear Optics. G. C. Baldwin—Book Review by A. M. Glass. 16(B)
- Goff, R. J.** (see Davies, J. M.)—1473(L)
- Goggins, W. R. and J. W. Moberly.** Thermal Dimensional Instabilities of Beryllium Mirrors—2691
- Goldman, A., T. G. Kyle, D. G. Murcay, F. H. Murcay, and W. J. Williams.** Long Path Atmospheric Ozone Absorption in the $9\text{--}10\ \mu$ Region Observed from a Balloon-Borne Spectrometer—565
- . Statistical Band Model Parameters for Long Path Atmospheric Ozone in the $9\text{--}10\ \mu$ Region—2600(L)
- Goodman, J. W.** Elementary Wave Optics. Robert H.

- Webb—Book Review by J. W. Goodman. 1244(B)
 —. (see Weaver, C. S.)—1672
 —. (see Lehmann, M.)—1948(L)
- Gorog, I.** Cathodochromic Image Displays—2243
- Gorstein, M., J. N. Hallock, and J. Valge.** Two Approaches to the Star Mapping Problem for Space Vehicle Attitude Determination—351
- Goss, W. C.** The Mariner Spacecraft Star Sensors—1056
- Grant, C. L.** Pacific Conference on Chemistry and Spectroscopy, Anaheim, California, 6-10 October 1969—975(MR)
- Grant, G. R.** (see Gunter, W. D., Jr.)—251
- Green, A. A.** (see Cole, A. R. H.)—23
- Green, A. E. S.** (see Deepak, A.)—2362
 —. (see Lipofsky, B. J.)—2372
- Gregor, E., B. R. Guscott, and J. J. Myers.** Mode Selection in a Pulse Transmission Mode Ruby System for Holography—1723(L)
- Greig, J. R.** Plasma Spectroscopy. G. V. Marr—Book Review by J. R. Greig. 874(B)
- Grey, David S.** Tolerance Sensitivity and Optimization—523
- Groh, G. and M. Kock.** 3-D Display of X-Ray Images by Means of Holography—775(L)
- Grojean, R. E.** (see Rendina, J. F.)—2148
- Grum, F.** (see Peden, R.)—2143
- Gruzensky, P. M.** (see Day, G. W.)—2794(L)
- Gudmundsen, R. A.** (see Eng, S. T.)—161
- Gulaya, S.** (see Sethares, J. C.)—2795(L)
- Gunter, W. D., Jr., G. R. Grant, and S. A. Shaw.** Optical Devices to Increase Photocathode Quantum Efficiency—251
- Gupta, C. L. and R. C. Tyagi.** Optical Working of Infrared Materials—675
- Guscott, B. R.** (see Gregor, E.)—1723(L)
- Haines, K. A.** Bandwidth Reduction in Holography, Using Periodic Dispersion Structures—1946(L)
- Hager, R. N., Jr.** (see Williams, D. T.)—1597
- Hall, F. F., Jr. and H. Y. Ageno.** Absolute Calibration of a Laser System for Atmospheric Probing—1820
- Hall, J. T.** Line Shape and Attenuation—1488(L)
- Hallock, J. N.** (see Gorstein, M.)—351
- Hanel, R. A., B. Schlachman, F. D. Clark, C. H. Prokesh, J. B. Taylor, W. M. Wilson, and L. Chaney.** The Nimbus III Michelson Interferometer—1767
 —. International Conference on Fourier Spectroscopy, Aspen, 16-20 March 1970—2212(MR)
- Hannan, W.** (see Bartolini, R.)—2283
- Hansen, C.** (see Harrison, A. W.)—1610
- Hard, T. M.** Laser Wavelength Selection and Output Coupling by a Grating—1825
- Harger, R. O.** (see Palermo, C. J.)—2813(L)
- Hargreaves, R. A.** (see Kelley, J. G.)—948
- Hargrove, L. E.** Interferometric Combinations of Frequency-Shifted Mode-Locked-Laser Pulses—953
- Hariharan, P.** Evaluation of the Modulation Transfer Function of Photographic Materials Using a Laser Speckle Pattern—1482(L)
- Harper, David C.** Preparation of Drawings for Optical Elements and Methods of Testing—527
 —. Comments on Optical Tolerancing. 2—2599(L)
- Harper, J. S.** (see Pennington, K. S.)—1643
 —. (see Pennington, K. S.)—2590(L)
- Harrick, N. J. and A. F. Turner.** A Thin Film Optical Cavity to Induce Absorption or Thermal Emission—2111
- Harris, O.** (see Malacara, D.)—1630
- Harris, R. J.** (see Reinheimer, C. J.)—2059
- Harrison, A. W., C. Hansen, and D. W. Will.** A Simple Digital Near Infrared Spectrometer—1610
- Harrison, H.** (see Cairns, R. B.)—605
- Harwit, M., P. G. Phillips, T. Fine, and N. J. A. Sloane.** Doubly Multiplexed Dispersive Spectrometers—1149
- Haskell, Richard E.** Introduction to Fourier Optics. Joseph W. Goodman—Book Review by Richard E. Haskell. 22(B)
 —. Principles of Holography. Howard M. Smith—Book Review by Richard E. Haskell. 22(B)
- Hass, G.** (see Bradford, A. P.)—339
 — and W. R. Hunter. Laboratory Experiments to Study Surface Contamination and Degradation of Optical Coatings and Materials in Simulated Space Environments—2101
- Hayes, C. L.** (see Cathey, W. T.)—701
- Heagerty, W. F.** Ideographic Composing Maching—2291
- Heaney, J. B.** (see Bradford, A. P.)—339
- Heiko, L.** (see Marathay, A. S.)—2470
- Heinemann, H. M.** Measurement of the Refractive Index and Dispersion of an Unpolished Sample on an Abbe Refractometer—2586(L)
- Heinisch, R. P., F. J. Bradac, and D. B. Perlick.** On the Fabrication and Evaluation of an Integrating Hemispheroid—483
 — and R. N. Schmidt. Development and Application of an Instrument for the Measurement of Directional Emittance of Blackbody Cavities—1920
 —. (see Sparrow, E. M.)—2569
- Heinz, R. A., J. O. Artman, and S. H. Lee.** Matrix Multiplication by Optical Methods—2161
- Helson, H. and T. Lansford.** The Role of Spectral Energy of Source and Background Color in the Pleasantness of Object Colors—1513
- Henderson, G.** Interferometry of the E Corona—2635
- Herbst, R. L.** (see Byer, R. L.)—2808(L)
- Herriott, D. R.** (see Rawson, E. G.)—753
- Herman, S. and E. W. Stark.** Reflector Design Based on the Transformation of Power Densities—1702
 —. Analysis of Multilayer Optical Filters Using Signal Flow Graph Techniques—2119
- Hernandez, G.** A High Luminosity Spectrometer for

- Night Airglow Studies—1225(L)
- . Analytical Description of a Fabry-Perot Photoelectric Spectrometer. 2: Numerical Results—1591
- Hernqvist, K. G.** Long-Pulse Operation of Argon Lasers—2247
- Herriott, D. R.** (see Bruning, J. H.)—2180(L)
- Herzog, D. G. and H. Kressel.** Thermoelectrically Cooled GaAlAs Laser Illuminator—2249
- Hilberg, R. P. and W. R. Hook.** Transient Elastooptic Effects and Q-Switching Performance in Lithium Niobate and KD*P Pockels Cells—1939(L)
- Hilbert, R. S. and M. P. Rimmer.** A Variable Refractive Null Lens—849
- Hill, K. O.** (see Kozma, A.)—721
- . (see Kozma, A.)—1947(L)
- Hillman, G., J. Tulip, and H. Seguin.** Pulse Repetition Rate Control and Stabilization in a Passively Q-Switched CO₂ Laser—515(L)
- Hilsenrath, Ernest.** American Meteorological Society Symposium on the Dynamics of the Mesosphere and Lower Thermosphere, 15-18 June 1970, Boulder—2609(MR)
- Hirsch, P. M.** (see Jordan, J. A., Jr.)—1883
- Hirschberg, J. G.** A Novel Means of Thermal Imaging—761
- and **W. I. Fried.** A Polarization Fabry-Perot Duochromator—1137
- and **F. N. Cooke, Jr.** Fresnel Annular Zone Objective: a New Optical Element—2807(L)
- Hochstrasser, Robin M.** Introductory Group Theory and its Application to Molecular Structure, by J. R. Ferraro and J. S. Ziomek—Book Review by Robin M. Hochstrasser—1734(B)
- Hoell, J. M., Jr.** (see Kogelschatz, U.)—494(L)
- Hodgkinson, I. J.** The Change in Thickness and Other Optical Properties of Ultraviolet Irradiated Silicon Oxide Films—1577
- Holland, A. C. and G. Gagne.** The Scattering of Polarized Light by Polydisperse Systems of Irregular Particles—1113
- Holmes, D. A., P. V. Avizonis, and K. H. Wroldstad.** On-Axis Irradiance of a Focused, Apertured Gaussian Beam—2179(L)
- Hook, W. R.** (see Hilberg, R. P.)—1939(L)
- Horner, J. L.** Optical Restoration of Images Blurred by Atmospheric Turbulence Using Optimum Filter Theory—167
- Horwitz, J. W.** Refractive Index of Corning 9025 Glass—1477(L)
- Hoskins, C. J.** (see Ferraro, J. R.)—5
- Houck, J. R.** (see Jones, B. W.)—2582(L)
- Houghton, W. M. and C. J. Jachimowski.** An Absorption Technique for Measuring OH Concentrations in Shock Tubes—329
- Hovis, W. A., Jr., L. R. Blaine, and M. L. Forman.** Infrared Reflectance of High Altitude Clouds—561
- Howard, John N.** From the Editor—John N. Howard, 83, 244, 663, A11 (April through December)
- . Atmospheric Physics in the Estonian Soviet Socialistic Republic. Edited by L. Reeves—Book Review by John N. Howard. 1242(B)
- . Radiation in the Atmosphere. Edited by L. Reeves—Book Review by John N. Howard. 1242(B)
- . 16th Annual Meeting Institute of Environmental Sciences, 12-16 April 1970, Boston—1732(MR)
- . Lasers and Holography, by Winston E. Kock—Book Review by John N. Howard—1733(B)
- . Optical Pumping and Atomic Line Shape, by T. Skalinski, Ed.—Book Review by John N. Howard—1733(B)
- . Tables of Light Trajectories in the Terrestrial Atmosphere, by F. Link and L. Neuzil—Book Review by John N. Howard—1734(B)
- . The Science of Moiré Patterns, by Gerald Oster—Book Review by John N. Howard—1963(B)
- . Lord Rayleigh, The Man and His Work, by R. B. Lindsay—Book Review by John N. Howard—2613(B)
- Howland, B. and A. F. Proll.** Operatus for the Accurate Determination of Flange Focal Distance—1247
- Huber, M. C. E.** (see Macar, P. J.)—581
- Huff, L. and L. G. DeShazer.** Explanation of Excited-State Absorption in Saturable Absorbers Using a Triple Absorption Model—233(L)
- Huffaker, R. M.** Laser Doppler Detection Systems for Gas Velocity Measurement—1026
- Huffman, R. E.** (see Levy, M. E.)—41
- Hulme, K. F.** Nonlinear Optics Conference, Queen's University of Belfast, 8-12 September 1969—404(MR)
- Hunsinger, B. J.** (see Lawson, R. L.)—2805(L)
- Hunt, G. R. and L. M. Logan.** An Image Selection Device for Use with a Telescope—2786(L)
- Hunt, R. P.** A Variable Wedge Birefringent Compensator—1220(L)
- Hunter, W. R.** (see Hass, G.)—2101
- Idso, S. B. and C. T. de Wit.** Light Relations in Plant Canopies—177
- Itoh, Y.** (see Tsuruta, T.)—2802(L)
- Iwata, K.** (see Nagata, R.)—2185(L)
- Jachimowski, C. J.** (see Houghton, W. M.)—329
- Jackson, J. E., L. B. Allen, and T. E. Bonham.** Paraboloidal Array of Spherical Segments for a Direct Detection Optical Receiver—2798(L)
- Jacobs, S. F.** (see Scully, M. O.)—1950(MR)
- . (see Scully, M. O.)—2414
- , **J. N. Bradford, and J. W. Berthold III.** Ultra-precise Measurement of Thermal Coefficients of Expansion—2477
- Jacobson, A. D.** (see McClung, F. J.)—103
- Jacobson, C. F.** (see Neumann, D. B.)—1357
- Jakobsen, R. J. and Y. Mikawa.** Infrared Spectroscopy at High Pressures: Polarized Spectra of Single Crystals of Acetonitrile—17

- Janáč, J.** Non-Dispersive Infra-Red Gas Analysis in Science, Medicine and Industry. D. W. Hill and T. Powell—Book Review by J. Janáč. 1242(B)
- Jarrett, S. M.** (see Booth, B. L.)—107
- Jego, J. M.** Amplification laser en faisceau divergent dans un barreau conique—225(L)
- Johannes, R. and R. Vogenthaler.** Spatial Modulation in Thin CdS Films—1714(L)
- . (see Feichtner, J. D.)—1716(L)
- Johnson, W. G.** Optics at Marshall Space Flight Center—369
- Johnson, W. O.** (see Meadows, D. M.)—942
- Johnston, A. R. and R. V. Powell.** Optics at the Jet Propulsion Laboratory—271
- Jones, B. W. and J. R. Houck.** A Lamellar Grating for Use with Infrared Spectrophotometers—2582(L)
- Jordan, J. A., Jr., P. M. Hirsch, L. B. Lesem, and D. L. Van Rooy.** Kinoform Lenses—1883
- Joynson, R. E.** Thin Film Phenomena. Kasturi L. Chopra—Book Review by R. E. Joynson. 15(B)
- Jull, G. W.** (see Kozma, A.)—721
- . (see Kozma, A.)—1947(L)
- Kabler, M. N.** (see Schneider, I.)—1163
- Kandarpa, V.** Theory of X-Ray and Thermal Neutron Scattering by Real Crystals. M. A. Krivogla—Book Review by V. Kandarpa. 1241(B)
- Karlsons, D.** (see Bartolini, R.)—2283
- Katchky, M.** (see Wenkoff, M. P.)—135
- Katon, J. E.** 10th European Congress on Molecular Spectroscopy, Liège, 28 September-3 October 1969—10(MR)
- Kattawar, G. W. and G. N. Plass.** Thermal Emission from Haze and Clouds—413
- . (see Plass, G. N.)—1122
- and M. Eisner. Radiation from a Homogeneous Isothermal Sphere—2685
- Katti, P. K., K. Singh, and A. K. Kavathekar.** Effect of an Apodizing Screen on the Rectangular and Triangular Wave Response of a Circular Aperture with Incoherent Incident Light—129
- , K. Singh, and K. N. Chopra. Diffraction Images of a General Periodic Rectangular Wave Object in a Polarizing Microscope with Crossed Polarizers—1379
- Kavathekar, A. K.** (see Katti, P. K.)—129
- Kaye, Brian H.** Automatic Image Analysis Seminar, Chicago, 22 May 1970—2215(MR)
- Keene, G. T.** (see Lauroesch, T. J.)—875
- Keilmann, F.** Infrared Interferometry with a CO₂ Laser Source and Liquid Crystal Detection—1319
- Kellen, P. F.** (see Dyes, W. A.)—1105
- Kelley, J. G. and R. A. Hargreaves.** A Rugged Inexpensive Shearing Interferometer—948
- Kelsall, D.** Absolute Specular Reflectance Measurements of Highly Reflecting Optical Coatings at 10.6 μ —85
- Kendall, J. M., Sr. and C. M. Berdahl.** Two Blackbody Radiometers of High Accuracy—1082
- Keneman, S. A., A. Miller, and G. W. Tayler.** Phase Holograms in a Ferroelectric-Photoconductor Device—2279
- Kerwick, T. F.** (see Lauroesch, T. J.)—875
- Kienholz, D. F.** The Design of a Zoom Lens with a Large Computer—1443
- Kim, H. H. and H. Marantz.** A Study of the Neutral Atomic Iodine Laser—359
- King, M. C., A. M. Noll, and D. H. Berry.** A New Approach to Computer-Generated Holography—471
- and D. H. Berry. Varifocal Mirror Technique for Video Transmission of Three-Dimensional Images—2035
- King, R. J.** (see Bennett, J. M.)—236(L)
- Kingslake, R. and H. G.** A History of the Institute of Optics—789
- Kint, S.** (see Scherer, J. R.)—1615
- Kissell, K. E., C. Morais, A. Righini, and G. Righini.** An Optical System for Monochromatic Photography of the Electron Corona—2620
- Klaubert, E. C.** (see Dyes, W. A.)—1105
- Klauminzer, G. K.** An Inexpensive On-Line Computer System for Optical Spectroscopy—2183(L)
- Klugman, E. H.** (see Krause, F. R.)—1044
- Knestrick, G. L. and J. A. Curcio.** Measurements of Ultraviolet Spectral Radiance of the Horizon Sky—1574
- Knewstubb, P. F.** Introduction to Mass Spectrometry. J. Roboz—Book Review by P. F. Knewstubb. 34(B)
- Kniseley, R. N.** (see Reif, I.)—2398(L)
- Kock, M.** (see Groh, G.)—775(L)
- Kock, W. E., T. Ose, G. W. Stroke and J. Tsujiuchi.** 2nd U.S.-Japan Holography Seminar, Washington, D. C., 13-17 October 1969—1496(MR)
- . Holographie—M. Françon, Book Review by Winston E. Kock—1503(B)
- . Einführung in die Technik der Holographie, by H. Kiemle and D. Röss—Book Review by Winston E. Kock—2205(B)
- Koehnner, W.** Absorbed Pump Power, Thermal Profile and Stresses in a cw Pumped Nd:YAG Crystal—1429
- . Thermal Lensing in a Nd:YAG Laser Rod—2548
- Koehler, W. F. and E. J. Ashley.** Elliptical Evaporation Tanks with Vertical Base and Cover Plates—2801(L)
- Koester, C. J.** (see Collier, R. J.)—1039
- Kogelnic, H.** (see Sosnowski, T. P.)—2186(L)
- Kogelschatz, U., D. R. Brooks, and J. M. Hoell, Jr.** Improved Duochromator for Measurement of Small Spectral Line Shifts—494(L)
- Kondo, Y.** (see Blitzstein, W.)—2537
- Korka, J. E.** Standing Waves in Photoresists—969(L)
- Korpel, A.** (see Watson, W. H.)—1176

- Kozma, A., G. W. Jull, and K. O. Hill.** An Analytical and Experimental Study of Nonlinearities in Hologram Recording—721
- , **G. W. Jull, and K. O. Hill.** Corrections to: An Analytical and Experimental Study of Nonlinearities in Hologram Recording—1947(L)
- Krause, F. R., Ming-Yang Su, and E. H. Klugman.** Passive Optical Detection of Meteorological Parameters in Launch Vehicle Environments—1044
- Kreins, E. R. and L. J. Allison.** Color Enhancement of Nimbus High Resolution Infrared Radiometer Data—681
- Kressel, H.** (see Herzog, D. G.)—2249
- Kurtin, S. L., G. S. Picus, and C. J. Buczek.** Wideband Optical Heterodyne Performance of Extrinsic Photconductive Infrared Radiation Detectors—1848
- Kurtz, R. L. and H. Y. Loh.** A Holographic Technique for Recording a Hypervelocity Projectile with Front Surface Resolution—1040
- Kvapil, J.** (see Clair, J. J.)—2585(L)
- Kyle, T. G.** (see Goldman, A.)—565
- Lagemann, Robert T.** Concepts in Physics. Robert K. Adair—Book Review by Robert T. Lagemann—338(B)
- Lahti, J. N. and C. M. Nagel, Jr.** Mixing Partially Coherent Fields with Gaussian Irradiance Profiles; Optimization Criteria—115
- Lakes, R. and S. K. Poultney.** Photocathode Quantum Efficiency enhancement of the RCA 31000E Photomultiplier at 6328 Å—2192(L)
- Lamb, W. E., Jr.** (see Sargent, M. III)—2423
- Lamberts, R. L.** An Instrument for Recording the Optical-Path Variation of Transmitting Objects—1345
- Laming, F. P.** (see Brandes, R. G.)—1712(L)
- Lampert, D. L.** Electron Optics. B. Paszkowski—Book Review by D. L. Lampert. 40(B)
- Lance, H. W.** Metrology Sessions at the 24th Annual ISA Conference, Houston, 27-30 October 1969—1497(MR)
- Land, Cecil E.** 9th Annual Symposium on Physics and Nondestructive Testing, Chicago, 23-25 September 1969—10(MR)
- Landes, C. M.** (see Meyer-Arendt, J. R.)—2176(L)
- Langenbeck, P.** Higher-Order Lloyd Interferometer—1838
- . Fizeau Interferometer—Fringe Sharpening—2053
- . Improved Collimation Test—2590(L)
- Lansford, T.** (see Helson, H.)—1513
- Lansford, T. G., D. Briggs, and E. C. Sage.** A Method for Conversion of Steradian Measurement to Visual Angle—412
- Lapson, L. B.** (see Blau, H. H., Jr.)—1798
- Larmore, Lewis.** Eclipses—Old and New—2617
- Lauer, J. P.** (see Lehman, M.)—1948(L)
- Lauroesch, T. J., G. G. Fulmer, J. R. Edinger, G. T. Keene, and T. F. Kerwick.** Threshold Modulation Curves for Photographic Films—875
- Lawson, R. L., B. J. Hunsinger, and F. Y. Cho.** Visualization of Acoustic Surface Waves in an Experimental Fabry-Perot Interferometer—2805(L)
- Lazar, I.** (see De Acetis, L. A.)—1691
- Ledger, A. M.** (see Peters, W. N.)—1435
- Lee, R. H.** (see Eddy, J. A.)—439
- , **R. M. MacQueen, and W. G. Mankin.** A Computer-Controlled Infrared Eclipse Telescope—2653
- Lee, S. H.** (see Heinz, R. A.)—2161
- Lee, Wai Hon.** Sampled Fourier Transform Hologram Generated by Computer—639
- Leftwich, R. F.** Comparison of InSb and HgCdTe in a Real-Time Scanning Infrared Camera—1941(L)
- Lehmann, M., J. P. Lauer, and J. W. Goodman.** High Efficiencies, Low Noise, and Suppression of Photochromic Effects in Bleached Silver Halide Holography—1948(L)
- Leith, E. N.** (see Palermo, C. J.)—2813(L)
- Lemaitre, M. P.** (see Girard, A.)—903
- Léna, P. J.** (see Eddy, J. A.)—439
- Leonard, E. T., M. A. Yaffee, and K. W. Billman.** White Light Laser—1209(L)
- . (see Yaffee, M. A.)—2388(L)
- Leppelmeier, G. W. and D. J. Mullenhoff.** A Technique to Measure the Wedge Angle of Optical Flats—509(L)
- Lesem, L. B.** (see Jordan, J. A., Jr.)—1883
- Lessing, N. v. d. W.** Precalculation Formulae for Cemented Doublet Mangin Mirrors—232(L)
- . Selection of Optical Glasses in Superachromats—1665
- . Further Considerations on the Selection of Optical Glasses in Superachromats—2390(L)
- Lester, D.** (see Webb, J. J.)—345
- Levene, M. L., R. D. Scott, and B. W. Siryj.** Material Transfer Recording—2260
- Levin, B. J.** (see Farhat, N. H.)—765
- Levine, M. A.** (see Tsacoyeanes, C.)—2597(L)
- Levinson, S.** (see Pernick, B. J.)—1902
- Levy, M. E. and R. E. Huffman.** Vacuum Ultraviolet Plasma Arc Radiation Source for the 300-1000Å Wavelength Region—41
- Liljenvall, H. G. and A. G. Mathewson.** Two Alignment Methods for the Polarizer and Analyzer in an Ellipsometer—1489(L)
- Liller, W.** High Dispersion Stellar Spectroscopy with an Echelle Grating—2332
- Lin, L. H. and H. L. Beauchamp.** Write-Read-Erase in Situ Optical Memory Using Thermoplastic Holograms—2088
- Lindquist, G. H.** (see Simmons, F. S.)—2792(L)
- Lipofsky, B. J. and A. E. S. Green.** Extinction and Forward Scattering in a Settling Aerosol—2372
- Lippincott, E. R.** (see Melveger, A. J.)—11
- Lipsett, F. R., G. Bechthold, F. D. Blair, F. V. Cairns, and D. H. O'Hara.** Apparatus for Measurement of

- Luminescence Spectra with a Digital Recording System—1312
- Lipson, H. S.** Proceedings of the Fifth International Congress on X-Ray Optics and Microanalysis, Tubingen 1968—Book Review by H. S. Lipson—2207(B)
- Lit, J. W. Y. and E. Brannen.** Aperture Field of a Narrow Slit in a Conducting Plane—235(L)
- Little, C. G.** (see Derr, V. E.)—1976
- Liu, B.** (see Gabel, R. A.)—1180
- Liu, I. D.** (see Baskett, J. R.)—49
- Logan, L. M.** (see Hunt, G. R.)—2786(L)
- Loh, H. Y.** (see Kurtz, R. L.)—1040
- Lohmann, A.** (see Bryngdahl, O.)—231(L)
- . A New Class of Varifocal Lenses—1669
- Long, R. K.** (see Rensch, D. B.)—1563
- Longfellow, J.** (see Miao, B. C.)—669
- Lopez-Lopez, F. J.** Normalization of the Delano Diagram—2485
- Lotsch, H. K. V. and W. C. Davis.** The Lensing Effect of CO₂ Laser Plasma—2725
- Loucka, W. A.** (see Palermo, C. J.)—2813(L)
- Lovins, G. H.** High Precision Path Difference Measurement—1935(L)
- Lubin, Arthur.** Laser Industry Association Convention, Los Angeles, 20-23 October 1969—437(MR)
- Lurie, M.** (see Zambuto, M.)—2066
- . (see Bartolini, R.)—2283
- Luszcz, E. T.** (see Matter, G. H.)—844
- Lytle, J. D.** A Suggested Procedure for Testing Large Cassegrainian Optical Systems—2497
- Macar, P. J., J. Rechavi, M. C. E. Huber, and E. M. Reeves.** Solar-Blind Photoelectric Detection Systems for Satellite Applications—581
- Macdonald, J.** (see Thetfird, A.)—35
- Mackin, A. S.** Holographic Recording on Electron Beam Colored Sodium Chloride Crystals—1658
- Macovski, A.** Spatial and Temporal Analysis of Scanned Systems—1906
- MacQueen, R. M.** (see Eddy, J. A.)—439
- . (see Lee, R. H.)—2653
- Maddox, W. E.** (see Bridwell, L.)—929
- Magyar, G. and A. C. Selden.** Lasers with Random Stack Mirrors—2040
- Mainster, M. A., T. J. White, and J. H. Tips.** Corneal Thermal Response to the CO₂ Laser—665
- Malacara, D. and A. Cornejo.** Testing of Aspherical Surfaces with Newton Fringes—837
- and O. Harris. Interferometric Measurement of Angles—1630
- . (see Cornejo, A.)—1897
- Malin, D. F.** Inter/Micro 1969, London, 9-11 September 1969—419(MR)
- Malliaris, A. C.** The Formation of Uniform Beams from Long and Thin Radiators—553
- Maloney, W. T.** (see McMahon, D. H.)—1363
- Malvick, A. J.** Thermal Deformations of Solid Mirrors—2481
- Mandler, W. A.** Concentric Telescopic Meniscus for Testing Underwater Lenses—771
- Mangus, J. D.** Optical Design of Glancing Incidence Extreme Ultraviolet Telescopes—1019
- Mankin, W. G.** (see Lee, R. H.)—2653
- Marantz, H.** (see Kim, H. H.)—359
- Marathay, A. S., L. Heiko, and J. L. Zuckerman.** Study of Rough Surfaces by Light Scattering—2470
- Mark, R., D. Morand, and S. Waldstein.** Temperature Control of the Bandpass of an Interference Filter—2305
- Marom, E.** Real-Time Measurements by Optical Correlation—1385
- Marrone, M.** (see Schneider, I.)—1163
- Marshall, G. F. and M. H. Williams.** Retroreflective Photometry for Screen Efficiency Evaluation—2134
- Martens, A. E. and D. D. Doonan.** Comments on: Influence of Refractive Index on the Accuracy of Size Determination of Aerosol Particles with Light-Scattering Aerosol Counters—1930(L)
- Martin, S.** Reduction of Veiling Glare in Optical Instruments by the Use of Lens Elements of Absorbing Glass—510(L)
- . Reduction of Veiling Glare in Optical Instruments by Use of Lens Elements of Absorbing Glass—2388(L)
- Maserjian, J.** A Thin-Film Capacitive Bolometer—307
- Mathewson, A. G.** (see Liljenvall, H. G.)—1489(L)
- Mathur, D. P., R. J. McIntyre, and P. P. Webb.** A New Germanium Photodiode with Extended Long-Wavelength Response—1842
- Matsumoto, T.** (see Nagata, R.)—2185(L)
- Matter, G. H. and E. T. Luszcz.** A Family of Optically Compensated Zoom Lenses—844
- Maxwell, K. J.** (see Wiswall, C. E.)—1724(L)
- Mayo, W. T., Jr.** Spatial Filtering Properties of the Reference Beam in an Optical Heterodyne Receiver—1159
- Mazumder, M. K. and D. L. Wankum.** SNR and Spectral Broadening in Turbulence Structure Measurement Using a cw Laser—633
- McAlister, E. D. and W. McLeish.** A Radiometric System for Airborne Measurement of the Total Heat Flow from the Sea—2697
- McCarthy, Gregory J.** 8th Rare Earth Research Conference, Reno, 19-22 April 1970—1953(MR)
- McCaul, B. W.** Plasma Self-O-Switching in Far Infrared Lasers—653
- McCleese, D. J.** (see Blau, H. H., Jr.)—2522
- McClung, F. J., A. D. Jacobson, and D. H. Close.** Some Experiments Performed with a Reflected-

- Light Pulsed-Laser Holography System—103
- McCubbin, T. K., Jr.** The Design of Optical Spectrometers J. F. James and R. S. Sternberg—Book Review by T. K. McCubbin, Jr.—338(B)
- (see Ely, R.)—1230(L)
- McFee, R. H.** Holographic Interferometry of Birefringent Crystal Growth from the Melt—1834
- McIntosh, R.** (see Webb, J. J.)—345
- McIntyre, R. J.** (see Mathur, D. P.)—1842
- McKellar, A. R. W., N. Rich, and V. Soots.** An Optical Cell for Long Pathlengths at Low Temperatures—222(L)
- McKenna, J.** (see Rawson, E. G.)—753
- McKenney, D. B.** Proceedings of the Fourth International Vacuum Congress. Arranged by The Joint British Committee for Vacuum Science and Technology—Book Review by D. B. McKenney—1247(B)
- and P. N. Slater. Design and Use of Interference Passband Filters with Wide-Angle Lenses for Multispectral Photography—2435
- and M. A. DeBell. Properties of Maxwell Garnett Indices for Thin Metal Films—2579(L)
- . X ray Spectrochemical Analysis, 2nd ed.—L. S. Birks, Book Review by D. B. McKenney—2613(B)
- McLeish, W.** (see McAlister, E. D.)—2697
- McMahon, D. H. and H. J. Caulfield.** A Technique for Producing Wide-Angle Holographic Displays—91
- and W. T. Maloney. Measurements of the Stability of Bleached Photographic Phase Holograms—1363
- Meadows, D. M., W. O. Johnson, and J. B. Allen.** Generation of Surface Contours by Moiré Patterns—942
- Measures, R. M.** Spectral Line Interferometry: a Proposed Means of Selectively Measuring the Change in the Density of a Specific Atomic Population—737
- Mee, C. H. B.** (see Batt, R. J.)—79
- Meinel, A. B.** The Optical Sciences Center of the University of Arizona. Part 1—2413
- . Aperture Synthesis Using Independent Telescopes—2501
- Melveger, A. J., J. W. Brasch, and E. R. Lippincott.** Laser Raman Spectra of Liquid and Solid Bromine and Carbon Disulfide Under High Pressure—11
- . 21st Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Cleveland, 1-6 March 1970—1500(MR)
- Menzel, R. and F. M. Shofner.** An Investigation of Fraunhofer Holography for Velocimetry Applications—2073
- Menzel, D. H. and J. M. Pasachoff.** Eclipse Instrumentation for the Solar Corona—2626
- , W. W. Salisbury, and D. L. Fernald. A System for Recording the Polarization of Extended Astronomical Objects—2648
- Merritt, J. A.** (see Dezenberg, G. J.)—516(L)
- Metherell, A. F.** Conference on Holography and the Computer, Houston, 10-12 December 1969—1498(MR)
- Metzger, A. E. and J. R. Arnold.** Gamma Ray Spectroscopic Measurements of Mars—1289
- Meyer-Arendt, J. R., T. M. Alexander, C. M. Landes and K. Wilder.** Gradient Density Glasses for Night Driving—2176(L)
- Meyer-Bourbonneux, F.** (see Farrenq, R.)—1587
- Meyer, C.** (see Farrenq, R.)—1587
- Mezrich, R. S.** Magnetic Holography—2275
- Miao, B. C. and J. Longfellow.** A Laser-Assisted Infrared Scanning Technique for Evaluating Bonded Connections on Beam Lead Microcircuits—669
- Michael, F.** A Rapid Check on the Stability and Coherence of a Total Holographic System—1481(L)
- Michels, J. H.** (see Demma, F. J.)—2788(L)
- Mielenz, K. D.** (see Funkhouser, A. T.)—1215(L)
- Mikawa, Y.** (see Jakobsen, R. J.)—17
- Millbrandt, W. W.** (see Gerritsen, H. J.)—1231(L)
- Miller, A.** (see Keneman, S. A.)—2279
- Miller, C. G.** (see Bartera, R. E.)—1068
- Miller, H. Y.** (see Siegman, A. E.)—2729
- Mingace, H. S., Jr.** (see Benton, S. A.)—2812(L)
- Mitra, S. S.** (see Ferraro, J. R.)—5
- Miyata, T.** (see Tomiki, T.)—1492(L)
- Moberly, J. W.** (see Goggin, W. R.)—2691
- Mondal, P. K. et S. Slanksy.** Influence de la position de l'anneau de phase sur le contraste de l'image dans un objectif a contraste dephase—1879
- (see Clair, J. J.)—2585(L)
- Monson, Daryl J.** Measured Time Variations of Reflectance for CO₂ Laser Beam Splitters—224(L)
- Montgomery, D. R. and L. A. Adams.** Optics and the Mariner Imaging Instrument—277
- Moore, C. B.** (see Aloway, J.)—1811
- Moore, S. E.** (see Rolfe, J.)—63
- Moos, H. W., R. C. Vitz, J. R. Barry, and J. L. Buckley.** Small LiF Prism Spectrometer for Space Applications—601
- Morais, C.** (see Kissell, K. E.)—2620
- Morand, D.** (see Mark, R.)—2305
- Moskovits, M.** (see Dignam, M. J.)—1868
- Mudar, Joseph.** A Handbook on the Construction of Optical-Mechanical Instruments. M. Ya. Kruger, V. A. Panov, V. V. Kulagin, G. V. Pogarev, Ya. M. Kruger, and A. M. Levinson—Book Review by Joseph Mudar—338(B)
- Mullenhoff, D. J.** (see Leppelmeier, G. W.)—509(L)
- Müller, A.** Neue Elemente in der Technik der Laser Doppler Velocimeter—2393(L)
- Munnerlyn, C. R. and J. W. Balliett.** Alignment Requirements for Mode Matching in a Confocal Fabry-Perot Interferometer—2535
- Murcray, D. G.** (see Goldman, A.)—565

- Murcay, F. H.** (see Goldman, A.)—565
- Murray, B. C. and M. E. Davies.** Space Photography and the Exploration of Mars—1270
- Murty, M. V. R. K.** A Focal Isolation Lens—477
- . Abridged Lens and Prism Sets—774(L)
- and **A. L. Narasimham.** Some New Direct Vision Dispersion Prism Systems—859
- . A Compact Lateral Shearing Interferometer Based on the Michelson Interferometer—1146
- Muzii, L.** (see Bertolotti, M.)—510(L)
- Myers, J. J.** (see Gregor, E.)—1723(L)
- Nagata, R., K. Iwata, and T. Matsumoto.** Holographic Section Profiling of a Three-Dimensional Object by Illumination with Interference Fringes—2185(L)
- Nagel, C. M., Jr.** (see Lahti, J. N.)—115
- Nagel, Max R.** 14th Annual Technical Symposium of the Society of Photo-Optical Instrumentation Engineers, 11-14 August 1969, San Francisco—380(MR)
- Namioka, T. and M. Seya.** Optical Properties of a System Consisting of a Mirror and a Grating—459
- Narasimham, A. L.** (see Murty, M. V. R. K.)—859
- Narasimhamurty, T. S.** (see Veerabhadra Rao, K.)—155
- NBS Office of Technical Information and Publications.** Laser Power and Energy Measurements Seminar, NBS-Boulder, 4-5 December 1969—1731(MR)
- Neill, A. H., Jr.** High-Energy Light Detector for Use with Pulsed Ruby and Glass Lasers—2392(L)
- Neuder, S. M.** Spectral Modification for Solar Simulation—1014
- Neumann, D. B., C. F. Jacobson, and G. M. Brown.** Holographic Technique for Determining the Phase of Vibrating Objects—1357
- Nichols, L. W.** (see Olsen, A. L.)—2585(L)
- Nicholson, A. J. C.** A Gas Discharge Lamp for the Extreme Ultraviolet—1155
- Nicodemus, F. E.** Reflectance Nomenclature and Directional Reflectance and Emissivity—1474(L)
- Nishida, Nobuo.** Correction of the Shrinkage of a Photographic Emulsion with Triethanolamine—238(L)
- Noll, A. M.** (see King, M. C.)—471
- Nunnally, N. R.** A Comparison of Microdensitometry and TV Waveform Analysis as Expressions of Observed Landscape Patterns on Radar—749
- Offenberger, A. A.** Analysis of a Thermocouple Laser Power Meter—2594(L)
- Ogawa, M. and K. R. Yamawaki.** Absorption Coefficients of O₂ at the Lyman- α Line and of other O₂ Transmission Windows—1709(L)
- Ogrodnik, R. F.** An Analysis of Optical Effects Caused by Thermally Induced Mirror Deformations—2028
- O'Hara, D. H.** (see Lipsett, F. R.)—1312
- Olaofe, G. O.** Scattering by Two Rayleigh-Debye Spheres—429
- Olsen, A. L. and L. W. Nichols.** Modification of the Infrared Source Circuit in the Cary Model 14 Spectrophotometer—2585(L)
- Omegna, R. L.** (see Gerritsen, H. J.)—1231(L)
- Ormes, J. F.** 6th AFCRL Scientific Balloon Symposium, Wentworth, 8-10 June 1970—2407(MR)
- Orville, R. E. and L. E. Salanave.** Lightning Spectroscopy Photographic Techniques—1775
- Osborne, G. A.** (see Cole, A. R. H.)—23
- . Developments in Applied Spectroscopy—edited by E. L. Grove and A. J. Perkins. Book Review by G. A. Osborne—1501(B)
- Ose, T.** (see Kock, W. E.)—1496(MR)
- Palais, J. C.** Scanned Beam Holography—709
- Palermo, C. J., E. N. Leith, R. O. Harger, and W. A. Loucka.** Suppression of the Holographic Twin Image by Nonlinear Techniques—2813(L)
- Palmari, J-P.** (see Pétrakian, J-P.)—2115
- Palmer, A. J. and J. F. Asmus.** A Study of Homogenization and Dispersion of Laser Induced Stress Waves—227(L)
- Parkinson, G. J.** Long Path Difference Interferometry Using a Simple Gas Laser—2809(L)
- Parkinson, W. H.** (see Reeves, E. M.)—1201
- Pasachoff, J. M.** (see Menzel, D. H.)—2626
- Paul, Fred W.** Optics in NASA—a Preface—243
- . (see Dunkelman, L.)—1003
- Pearson, A. D.** (see Brandes, R. G.)—1712(L)
- Peden, R. and F. Grum.** A Photomechanical Device for Triggering Digital Output on a GE Spectrophotometer—2143
- Pell, Erik M.** Symposium on Electrography—Electronic Hardcopy, IEEE International Convention, New York, 23 March 1970—1952(MR)
- Pellicori, S. F.** Optical Bonding Agents for Severe Environments—2581(L)
- Pennington, K. S. and J. S. Harper.** Techniques for Producing Low-Noise, Improved Efficiency Holograms—1643
- and **J. S. Harper.** Techniques for Producing Low-Noise, Improved Efficiency Holograms. 2: Erratum—2590(L)
- Perlick, D. B.** (see Heinisch, R. P.)—483
- Pernick, B. J. and A. Reich.** A Holographic System for Large Time-Bandwidth Product Multichannel Spectral Analysis—229(L)
- , **S. Levinson, and C. Bartolotta.** Enhancement of Low Spatial Frequency Signals with Optical Aperture Tapering—1902
- Perry, C. H.** (see Tornberg, N. E.)—777(L)
- Peter, P. H.** (see Davies, J. M.)—1473(L)
- Peters, W. N. and A. M. Ledger.** Techniques for Matching Laser TEM₀₀ Mode to Obscured Circular Aperture—1435
- Peterson, H. A.** (see Dhir, S. K.)—1216(L)
- Peterson, L. M.** (see Wiggins, T. A.)—2177(L)
- Petford, A. D.** (see Collins, B. S.)—1606
- Pétrakian, J-P., J-P. Palmari, et G. Rasigni.** Les pro-

- priétés optiques de couches minces d'yttrium sous ultravide statique—2115
- Petrakiev, Asparuch.** 6th International Conference on the Physics of Electronic and Atomic Collisions, Massachusetts Institute of Technology, 28 July-2 August 1969—1729(MR)
- Petrakiev, Asparuch.** 9th International Conference on Phenomena in Ionized Gases, Bucharest, 1-6 September 1969—1729(MR)
- Petrishchev, V. A.** (see Vlasov, S. N.)—1486(L)
- Pfitzer, E. K., R. P. Edwin, and R. Turner.** A Simple Method for Providing a Large Amplitude Mirror Oscillation in an Infrared Interferometer—512(L)
- Phillips, D.** (see Capelle, G.)—517(L)
- . (see Capelle, G.)—2742
- Phillips, P. G.** (see Harwit, M.)—1149
- Phillips, W.** (see Duncan, R. C., Jr.)—2236
- Pickett, H. M., G. M. Bradley, and H. L. Strauss.** A New White Type Multiple Pass Absorption Cell—2397(L)
- Picus, G. S.** (see Kurtin, S. L.)—1848
- Piech, Kenneth.** Intermediate Quantum Mechanics—Hans A. Bethe and Roman Jackiw, Book Review by Kenneth Piech—1501(B)
- Pinson, P.** (see Farrenq, R.)—1587
- Pirie, A.** Vision and Its Disorders. NINDB Monograph 4—Book Review by A. Pirie. 39(B)
- Pizzurro, V. F.** (see Cathey, W. T.)—701
- Plass, G. N.** (see Kattawar, G. W.)—413
- and **G. W. Kattawar.** Polarization of the Radiation Reflected and Transmitted by the Earth's Atmosphere—1122
- . Comment on: The Effects of Particle Size on Contrast Improvement by Polarization Discrimination for Underwater Targets—1932(L)
- Pleindl, J. N.** Characteristic Spectra of Energy Absorption for Dielectric Solids—2768
- Poehler, T. O. and R. Turner.** Transmission of Polarized Far Infrared Radiation Through Metal Light Pipes—971(L)
- Pogelhof, R. C.** Radiation Properties of a Semitransparent Spherical Body—2790(L)
- Pollack, M. A.** (see Ulrich, R.)—2511
- Polster, H. D.** The Common Test for Plane Mirrors—840
- Poole, R. R.** (see Schwarz, F.)—1940(L)
- Postmus, C.** (see Ferraro, J. R.)—5
- Potter, R. F.** Pseudo-Brewster Angle and the Optical Constants—1717(L)
- Poultney, S. K.** (see Lakes, R.)—2192(L)
- Powell, R. V.** (see Johnston, A. R.)—271
- Powers, W. T.** (see Burns, J.)—1719(L)
- and **J. Burns.** Experimental Evaluation of Geometric Accuracy and Stability of the Image Orthicon for Astronomical Applications—2172
- Pogelhof, R. C. and J. L. Thorne.** Radiation Characteristics of a Scattering, Absorbing Dielectric Sheet—2359
- Progelhof, R. C.** Radiation Properties of a Semitransparent Spherical Body—2790(L)
- Prokesh, C. H.** (see Hanel, R. A.)—1767
- Proll, A. F.** (see Howland, B.)—1247
- Prydz, S.** (see Smith, D. G.)—503(L)
- . An Image Detector for Dispersed Fluxes of Energetic Particles on γ Quanta Employing a Fiber-Optics Delay Technique for Addressed Multichannel Counting—2193(L)
- Quenzel, H.** Authors's Reply to Comments by Martens and Doonan—1931(L)
- Quirk, William.** Phase-Space Dynamics of Particles—A. J. Lichtenberg, Book Review by William Quirk—1500(B)
- Rajchman, J. A.** An Optical Read-Write Mass Memory—2269
- Ramberg, E. G.** Optics and Electron Optics as Competitive and Complementary Technologies in Electronics—2294
- Ramsay, I. A. and J. J. Degnan.** A Ray Analysis of Optical Resonators Formed by Two Spherical Mirrors—385
- Ramsey, S. D.** (see Weaver, C. S.)—1672
- Rank, D. H.** (see Wiggins, T. A.)—2177(L)
- Rasigni, G.** (see Pétrikian, J.-P.)—2115
- Rawson, E. G., D. R. Herriott, and J. McKenna.** Analysis of Refractive Index Distributions in Cylindrical, Graded-Index Glass Rods (Grin Rods) Used as Image Relays—753
- Raymond, O. J.** Limiting Fringe Pointing Precision in a Scanning Two-Beam Interferometer—1140
- Rea, D. G.** Exobiology and the Exploration of Mars—2—1269
- Reay, N. K.** (see Burton, W. M.)—1227(L)
- Rechavi, J.** (see Macar, P. J.)—581
- Redaelli, G.** A Simple Sealed-Off TEM₀₀ Ion Laser Ceramic Tube—2593(L)
- Reece, G. D.** (see Cole, A. R. H.)—23
- Reed, F. A.** Methods of Determining the Spatial Response Nonlinearities of Radiometers—2130
- Reeves, E. M.** (see Macar, P. J.)—581
- and **W. H. Parkinson.** Calibration Changes in EUV Solar Satellite Instruments—1201
- Reich, A.** (see Pernick, B. J.)—229(L)
- Reif, I., R. N. Kniseley, and V. A. Fassel.** Effect of the Area Sensitivity of Photomultiplier Tubes on the Measurement of Integrated Spectral Line Intensities—2398(L)
- Reinheimer, C. J., C. E. Wiswall, R. A. Schmiede, R. J. Harris, and J. E. Dueker.** Holographic Subsonic Flow Visualization—2059
- Rendina, J. F. and R. E. Grojean.** A High Resolution Electron Impact Spectrometer for Chemical Analysis of Gases and Vapors—2148
- Reneker, Darrell H.** Molecular Processes on Solid Surfaces. E. Drauglis, R. D. Gretz, and R. I. Jaffee—Book Review by Darrel H. Reneker—469(B)
- Rennilson, J. J.** (see Squyres, H. P.)—1092
- Rensch, D. B. and R. K. Long.** Comparative Studies of

- Extinction and Backscattering by Aerosols, Fog, and Rain at $10.6\ \mu$ and $0.63\ \mu$ —1563
- Rich, N.** (see McKellar, A. R.)—222(L)
- Richardson, A. J.** (see Gausman, H. W.)—545
- . (see Allen, W. A.)—2573
- Righini, A.** (see Kissell, K. E.)—2620
- Righini, G.** (see Kissell, K. E.)—2620
- Rigler, A. K.** (see Brandt, G. B.)—2554
- Riise, H. N.** (see Bartera, R. E.)—1068
- Rimmer, M.** Analysis of Perturbed Lens Systems—533
- Rimmer, M. P.** (see Hilbert, R. S.)—849
- Rinzema, G.** A Simple Wavelength-Independent Modulator for Linearly Polarized Light—1943(L)
- Roberts, L. W.** Optics at the Electronics Research Center—335
- Roberts, R. L.** (see Dieck, R. H.)—2007
- Robinson, D. M.** A Calculation of Edge Smear in Far Field Holography Using a Short-Cut Edge Trace Technique—496(L)
- Rogers, G. L.** An Improved Polarization Beam Chopper—2396(L)
- Roland, G. W.** (see Feichtner, J. D.)—1716(L)
- Rolfe, J. and S. E. Moore.** The Efficient Use of Photomultiplier Tubes for Recording Spectra—63
- Romero, H. V.** (see Bell, R. J.)—2341
- . (see Bell, R. J.)—2350
- Ronchi, L.** (see Consortini, A.)—125
- . The Asymptotic Expression for the Resonant Mode Losses of a Fabry-Perot Open Resonator—733
- . (see Consortini, A.)—2543
- Rooke, Gilbert A.** 3rd Materials Research Symposium—Electronic Density of States, National Bureau of Standards, 3-6 November 1969—976(MR)
- Rose, H. W., T. L. Williamson, and S. A. Collins, Jr.** Polarization Effects in Holography—2394(L)
- Rose, J. C.** (see Craig, C. D.)—974(L)
- Rosie, A. M.** (see Weaver, C. S.)—1672
- Rotz, F. B.** (see Vander Lugt, A.)—215
- Rowe, J. E.** (see Shaklee, K. L.)—627
- Rowe, S. H.** Efficiency Enhancement of Light Modulators—1222(L)
- Rowell, R. L.** Reply to Comments on the Determination of the Absolute Alignment of a Polarizer—1709(L)
- Roy, E. L.** (see Dezenberg, G. J.)—516(L)
- Royce, G. A. and M. Sargent III.** Isotope Dependence of Gas Laser Intensity Profiles—2428
- Rubin, A. G.** (see Ben-Yosef, N.)—1698
- Ruscio, J. T.** (see Arnaud, J. A.)—2377
- Russell, S.** (see Ammon, G.)—2256
- Ryan, R. T.** (see Blau, H. H., Jr.)—1798
- Sage, E. C.** (see Lansford, T. G.)—412
- Saintout, L. H.** (see Beswick, J. A.)—1937(L)
- Saito, T. T.** (see Wiggins, T. A.)—2177(L)
- Salanave, L. E.** (see Orville, R. E.)—1775
- Salisbury, W. W.** (see Menzel, D. H.)—2648
- Salomonson, V. V. and W. E. Shenk.** Visible and Infrared Imagery from Meteorological Satellites—1747
- Salzmann, H.** A Simple Interferometer Based on the Ronchi Test—1943(L)
- Sanderson, J. A.** OSA Research and Education—1251, 2204, 2818
- Sands, P. J.** Aberration Coefficients and Unusual Coordinates for Specifying Rays—828
- Sargent, M., III.** (see Scully, M. O.)—1950(MR)
- , **M. O. Scully, and W. E. Lamb, Jr.** Buildup of Laser Oscillations from Quantum Noise—2423
- . (see Royce, G. A.)—2428
- Saum, K. A. and W. M. Benesch.** Infrared Electronic Emission Spectrum of Nitrogen—195
- and **W. M. Benesch.** Infrared Electronic Emission Spectrum of Oxygen—1419
- Saunders, J. B.** A Simple Interferometric Method for Workshop Testing of Optics—1623
- Schaefer, V. J.** Time Lapse Photography of Clouds—1817
- Schalwijk, J. P. M.** International Symposium on Information Theory Noordwijk, The Netherlands, 15-19 June 1970—2610(MR)
- Schaper, P. W. and J. H. Shaw.** Performance of a Spectrometer for Measuring the Earth's Radiance near $4.3\ \mu$ —924
- Scherer, J. R. and S. Kint.** On-Line Acquisition of Data from Raman and Infrared Spectrometers with a Time-Sharing Computer—1615
- Schiffner, G.** A Scanning Spherical Mirror Interferometer for the Analysis of CO_2 Laser Radiation—373
- Schindler, R. A.** A Small, High Speed Interferometer for Aircraft, Balloon, and Spacecraft Applications—301
- Schlachman, B.** (see Hanel, R. A.)—1767
- Schleiger, E. R. and L. A. Webb.** Total Hemispherical Emittance of Germanium and Silicon at Low Temperature—1222(L)
- Schmidt, R. N.** (see Heinisch, R. P.)—1920
- Schmidtke, G.** Diffraction Filters in XUV Spectroscopy—447
- Schmiege, R. A.** (see Reinheimer, C. J.)—2059
- Schmitt, H. C., Jr. and J. H. Altman.** Method of Measuring Diffuse RMS Granularity—871
- Schneider, I., M. Marrone, and M. N. Kabler.** Dichroic Absorption of M Centers as a Basis for Optical Information Storage—1163
- Schneider, W. E.** A One-Solar-Constant Irradiance Standard—1410
- Schoen, R. I.** (see Cairns, R. B.)—605
- Schönbach, K. and H. Fischer.** Explosive Anode Erosion in High Current Sparks—1695
- Schotland, R. M.** A Mode Controlled Q-Switched Tunable Ruby Laser—1211(L)
- Schroeder, J. B.** (see Bloxson, J. T.)—539
- Schurin, B. and R. E. Ellis.** Total Intensity Measurements for the CO_2 Bands in the 961-cm^{-1} and

- 1061-cm⁻¹ Regions—223(L)
- Schwarz, F. and R. R. Poole.** Performance Characteristics of a Small TGS Detector Operated in the Pyroelectric Mode—1940(L)
- Scott, R. D.** (see Levene, M. L.)—2260
- Scully, M. O., M. Sargent III, and S. F. Jacobs.** OSA Spring Meeting, Philadelphia, 7-10 April 1970—1950(MR)
- and **S. F. Jacobs.** Coherence—A Sticky Subject—2414
- (see Sargent, M. III)—2423
- Sedgwick, G. and H. Seguin.** Low Voltage CO₂ Laser Excitation—2737
- Seguin, H.** (see Hillman, G.)—515(L)
- (see Sedgwick, G.)—2737
- Selden, A. C.** (see Magyar, G.)—2040
- Selke, L. A.** Theoretical Elastic Deflections of a Thick Horizontal Circular Mirror on a Ring Support—149
- Theoretical Elastic Deformations of a Thick Horizontal Circular Mirror on a Double-Ring Support—1453
- Sell, D. D.** A Sensitive Spectrophotometer for Optical Reflectance and Transmittance Measurements—1926
- Sethares, J. C. and S. Gulaya.** Visual Observations of RF Magnetic Fields Using Cholesteric Liquid Crystals—2795(L)
- Sette, D.** (see Bertolotti, M.)—510(L)
- (see Bertolotti, M.)—962
- Severin, P. J.** On the Infrared Thickness Measurement of Epitaxially Grown Silicon Layers—2381
- Seya, M.** (see Namioka, T.)—459
- Shack, R. V.** SPSE Seminar on Low Light Level Systems, New York, 19-20 March 1970—2212(MR)
- Shaffer, J. J. and D. L. Fried.** Bender-Bimorph Scanner Analysis—933
- Shaklee, K. L. and J. E. Rowe.** Wavelength Modulation Spectrometer for Studying the Optical Properties of Solids—627
- Shankoff, T. A.** (see Curran, R. K.)—1651
- Shapiro, I. I.** A Colloquium on Planetary Atmospheres and Surfaces, Woods Hole, 11-15 August 1969—403(MR)
- Sharpless, W. M.** Evaluation of a Specially-Designed GaAs Schottky-Barrier Photodiode Using 6328-Å Radiation Modulated at 4 GHz—489
- Shaw, J. H.** (see Schaper, P. W.)—924
- Shaw, S. A.** (see Gunter, W. D., Jr.)—251
- Shenk, W. E.** (see Salomonson, V. V.)—1747
- Sherman, B. and J. F. Black.** Scanned Laser Infrared Microscope—802
- Shofner, F. M.** (see Menzel, R.)—2073
- Shulman, A. D.** Design Considerations for an Infrared Flying-Spot Optical Telescope—2505
- Siegman, A. E.** International Meeting on Lasers and their Applications, Dresden, 10-17 June 1970—2608(MR)
- and **H. Y. Miller.** Unstable Optical Resonator Loss Calculations Using the Prony Method—2729
- Silfvast, W. T. and L. H. Szeto.** A Simple High Temperature System for cw Metal Vapor Lasers—1484(L)
- Silvera, I. F. and G. Birnbaum.** A Far Infrared Spectrometer—617
- Simmons, F. S., C. B. Arnold, G. H. Lindquist, and F. G. Smith.** Calculation of Radiation from Hot H₂O and CO₂ Viewed Through a Cool Intervening Atmosphere—2792(L)
- Simon, J.** New Noncontact Devices from Measuring Small Microdisplacements—2337
- Simpson, W. A. and W. E. Deeds.** Real-Time Visual Reconstruction of Infrared Holograms—499(L)
- Sinclair, D. C.** Optical Loss and Thermal Distortion in Gas-Laser Brewster Windows—797
- Singh, K.** (see Katti, P. K.)—129
- (see Katti, P. K.)—1379
- and **G. S. Bhatnagar.** Sparrow Limit of Spectral Resolution in the Reflection Echelon and the Fabry-Perot Interferometer Having Surface Imperfections—2236
- Siryj, B. W.** (see Levene, M. L.)—2260
- Slansky, S.** (see Mondal, P. K.)—1879
- Slater, P. N.** (see McKenney, D. B.)—2435
- Sloane, N. J. A.** (see Harwit, M.)—1149
- Sloan, T. R.** Analysis and Correction of Secondary Color in Optical Systems—853
- Smartt, R. N.** A Variable Transmittance Beam Splitter—970
- Smith, D. G. and S. Prydz.** Comments on the Operation of a Proposed Multichannel Spectral Recording Instrument—503(L)
- Smith, F. G.** (see Simmons, F. S.)—2792(L)
- Smith, G. P.** Symposium on Research and Development, Zagreb International Fair, 11-21 September 1969—1237(MR)
- Smith, R. C., R. W. Austin, and J. E. Tyler.** An Oceanographic Radiance Distribution Camera System—2015
- Smith, W. J.** Lens Design Technical Group—2614
- Smith, W. L.** Iterative Solution of the Radiative Transfer Equation for the Temperature and Absorbing Gas Profile of an Atmosphere—1993
- Snow, K. and R. Vandewarker.** On Using Holograms for Test Glasses—822
- Sollid, J. E. and J. B. Swint.** A Determination of the Optimum Beam Ratio to Produce Maximum Contrast Photographic Reconstructions from Double-Exposure Holographic Interferograms—2717
- Soots, V.** (see McKellar, A. R.)—222(L)
- Soref, R. A.** Electronically Scanned Analog Liquid Crystal Displays—1323
- Sosnowski, T. P. and H. Kogelnik.** Ultraviolet Hologram Recording in Dichromated Gelatin—2186(L)
- Sparrow, E. M. and R. P. Heinisch.** The Normal Emission of Circular Cylindrical Cavities—2569

- Squyres, H. P. and J. J. Rennilson.** Uniform Variable Light Sources for Instrument Calibration—1092
- Srinivasan, V. S.** Beam Reduction in Holography for Holographic Movies—2187(L)
- Stark, E. W.** (see Herman, S.)—1702
- Staunton, J. J.** Annual Meeting, Optical Society of America, Chicago, 21-24 October—543(MR)
- Stefanutti, L.** (see Consortini, A.)—2543
- Steel, W. H.** A Demonstration Fourierscope—1721(L)
- Stein, B.** (see Bliss, F. E.)—2023
- Stenman, Folke.** Light Scattering Spectra of Solids, by George B. Wright—Book Review by Folke Stenman—1733(B)
- Stevenson, W. H.** Optical Frequency Shifting by Means of a Rotating Diffraction Grating—649
- Stewart, D. R. and W. L. Davis.** Evaluation of a Large Glass-Ceramic Mirror Blank—938
- Stewart, W. C. and L. S. Cosentino.** Optics for a Read-Write Holographic Memory—2271
- Stolen, R. H.** Photoetched Laminary Gratings for Use in the Far Infrared—1229(L)
- Stoner, John O., Jr.** Properties of Axicon Systems for Collecting Foil-Excited Beam Spectra—53
- Strauss, H. L.** (see Pickett, H. M.)—2397(L)
- Streete, J. L.** (see Barnhardt, E. A.)—1337
- Stroke, G. W.** (see Kock, W. E.)—1496(MR)
- Stultz, K. F.** (see Blackmer, L. L.)—2753
- Su, Ming-Yang** (see Krause, F. R.)—1044
- Sumimoto, T.** (see Yoshino, T.)—1831
- Suzuki, T.** (see Dohi, T.)—2182(L)
- (see Yokozeki, S.)—2804(L)
- Swarner, W. G.** An Optical Spatial Filter for Achieving Wide Dynamic Range in Air-to-Water Optical Transmission—507(L)
- Sweeney, D. W.** (see Vest, C. M.)—2321
- (see Vest, C. M.)—2810(L)
- Swindell, W.** A Noncoherent Optical Analog Image Processor—2459
- Swint, J. B.** (see Sollid, J. E.)—2717
- Szeto, L. H.** (see Silfvast, W. T.)—1484(L)
- Takasaki, H.** Moiré Topography—1467
- Talanov, V. I.** (see Vlasov, S. N.)—1486(L)
- Tanaka, I.** (see Washida, N.)—1711(L)
- Tarasevich, M.** Ion Beam Erosion of Rough Glass Surfaces—173
- Taylor, G. W.** (see Keneman, S. A.)—2279
- Taylor, J. B.** (see Hanel, R. A.)—1767
- Thetford, A., B. Bates, and J. Macdonald.** On the Design of Fabry-Perot Reflectors for the Vacuum Ultraviolet—35
- Thompson, B. J.** The Institute of Optics—787
- Thorburn, E. K.** Comments on Optical Tolerancing. 1—2598(L)
- Comments on Optical Tolerancing. 3—2599(L)
- Thorne, J. L.** (see Progelhof, R. C.)—2359
- Tips, J. H.** (see Mainster, M. A.)—665
- Tischer, F. J.** Analysis of Ghost Images in Holography by the Use of Chebyshev Polynomials—1369
- Tobin, M. C.** Theoretical Comparison of Light Amplifier and Photomultiplier Tube Recording of Raman Spectra—502(L)
- Tomiki, T. and T. Miyata.** A New Optical Filter Designed for OI 1300-A Triplet Detection—1492(L)
- Tonna, G.** (see Ferrara, R.)—2517
- Tornberg, N. E. and C. H. Perry.** A Variable Temperature (8-400 K) Gas Transfer Cell for Solid State Spectroscopy—777(L)
- Toshinai, A.** (see Doi, K.)—2762
- Triolo, J. J.** (see Bradford, A. P.)—339
- Tsacoyeanes, C. and M. A. Levine.** Electronic Enhancement of Photodetector Performance—2597(L)
- Tsujiuchi, J.** (see Kock, W. E.)—1496(MR)
- Tsunashima, Y.** (see Utiyama, H.)—1330
- Tsuruta, T., Y. Itoh, and S. Anzai.** Moiré Topography for the Measurement of Film Flatness—2802(L)
- Tulip, J.** (see Hillman, G.)—515(L)
- Turner, A. F.** (see Harrick, N. J.)—2111
- Turner, R.** (see Pfitzer, E. K.)—512(L)
- (see Poehler, T. O.)—971(L)
- Turner, R. G.** (see Fried, D. L.)—2800(L)
- Tyagi, R. C.** (see Gupta, C. L.)—675
- Tyler, J. E.** (see Smith, R. C.)—2015
- Tynes, A. R.** Integrating Cube Scattering Detector—2706
- Ulrich, R., T. J. Bridges, and M. A. Pollack.** Variable Metal Mesh Coupler for Far Infrared Lasers—2511
- Utiyama, H. and Y. Tsunashima.** Low Angle, Light Scattering Photometer Model LS-2—1330
- Valge, J.** (see Gorstein, M.)—351
- Vanasse, George A.** Systems and Transforms with Applications in Optics. Athanasios Papoulis—Book Review by George A. Vanasse. 16(B)
- Vander Lugt, A. and F. B. Rotz.** The Use of Film Nonlinearities in Optical Spatial Filtering—215
- Vandewarker, R.** (see Snow, K.)—822
- van Raalte, J.** A New Schlieren Light Valve for Television Projection—2225
- VanKerkhove, A. P.** (see Blackmer, L. L.)—2753
- Van Rooy, D. L.** (see Jordan, J. A., Jr.)—1883
- Van Valkenburg, A.** High Pressure Optics—1
- Varanasi, P.** An Infrared Filter for the 3.39- μ He-Ne Laser—2191(L)
- Varner, J. R.** Desensitized Hologram Interferometry—2-98
- Vaško, A.** The Detection and Measurement of Infrared Radiation. R. A. Smith, F. E. Jones, and R. P. Chasmar—Book Review by A. Vaško. 48(B)
- Veerabhadra Rao, K. and T. S. Narasimhamurthy.** A New Technique to Study Photoelastic Dispersion in Cubic and Noncubic Crystals—155
- Veltman, B. P. Th.** (see de Graauw, Th.)—2658
- Venable, W. H., Jr.** Effects upon Radiant Intensity

- Measurements due to Scattering by Optical Elements—609
- Vest, C. M. and D. W. Sweeney.** Holographic Interferometry of Transparent Objects with Illumination derived from Phase Gratings—2321
- and **D. W. Sweeney.** Holographic Interferometry with Both Beams Traversing the Object—2810(L)
- Vilkomerson, D. H. R.** Measurements of the Noise Spectral Power Density of Photosensitive Materials at High Spatial Frequencies—2080
- Viraghalmy, G.** Colorimetry in Hungary—973(L)
- Vitz, R. C.** (see Moos, H. W.)—601
- Vlasov, S. N., V. A. Petrishchev, and V. I. Talanov.** Theory of Periodic Self-Focusing of Light Beams—1486(L)
- Voet, Donald.** Crystal Structures, Vol. 6, The Structure of Benzene Derivatives. Part I: Molecules Containing One Benzene Ring, Second Edition—Ralph W. G. Wyckoff, Book Review by Donald Voet—2613(B)
- Vogenthaler, R.** (see Johannes, R.)—1714(L)
- Vonnegut, B.** (see Aloway, J.)—1811
- Time Lapse Photography from High Altitude Balloons—1814
- von Thüna, P.** (see Blau, H. H., Jr.)—1798
- Wagner, W. J.** (see Beckers, J. M.)—1933(L)
- Wagoner, C. B.** (see Bader, M.)—265
- Waksberg, A. L. and J. I. Wood.** Atmospheric Phase Jitter Measurements for a HeNe Phase Locked Laser—518(L)
- Waldstein, S.** (see Mark, R.)—2305
- Walker, J. L.** (see Friesem, A. A.)—201
- Walsh, T. M. and D. N. Warner, Jr.** Interferograms of Window Wavefront Deformations as a Measure of Angular Deviations to a Line of Sight—1097
- Wankum, D. L.** (see Mazumder, M. K.)—633
- Wardle, M. W. and H. J. Gerritsen.** Application of Holographic Interferometry to the Static Meniscus—1639
- Wark, D. O.** SIRS: An Experiment to Measure the Free Air Temperature from a Satellite—1761
- Warner, D. N., Jr.** (see Walsh, T. M.)—1097
- Washida, N., H. Akimoto, and I. Tanaka.** Carbon Lamp: an Intense Line Source at 1931 Å for Photochemistry—1711(L)
- Washwell, E. R.** (see Dobrov, W. I.)—1485(L)
- and **K. F. Cuff.** High-Speed Electrooptic Spectral Scanning—1911
- Watson, D.** (see Blau, H. H., Jr.)—1798
- (see Blau, H. H., Jr.)—2522
- Watson, W. H. and A. Korpel.** Equalization of Acousto-optic Deflection Cells in a Laser Color TV System—1176
- Weart, S. R.** Photon Counting During an Eclipse—2650
- Weaver, C. S., S. D. Ramsey, J. W. Goodman, and A. M. Rosie.** The Optical Convolution of Time Functions—1672
- Webb, J. J., C. H. Duncan, R. McIntosh, and D. Lester.** Solar Spectral Irradiance Measured from 11.58km with a Leiss Monochromator and a Photoelectric Filter Radiometer—345
- Webb, L. A.** (see Schleiger, E. R.)—1222(L)
- Webb, P. P.** (see Mathur, D. P.)—1842
- Weinberg, D. L.** (see Yaffee, M. A.)—2388(L)
- Weir, C. E.** High Pressure Methods in Solid State Research. C. C. Bradley—Book Review by C. E. Weir. 15(B)
- Weisman, D. L.** Laser Beam Shaping for Streak Interferometry—1213(L)
- Welford, W. T.** Progress in Optics Vol. 7. Edited by Emil Wolf—Book Review by W. T. Welford. 1244(B)
- Weller, C. S. and J. M. Young.** Photomultiplier Yield of a Channel Electron Multiplier in the 304-1493-Å Wavelength Range—505(L)
- Welter, R. A.** (see Berens, A. S. C.)—2298
- Wenkoff, M. P. and M. Katchky.** An Improved Read-in Technique for Optical Delay Line Correlators—135
- Westerkamp, J. F.** (see Beswick, J. A.)—1937(L)
- White, T. J.** (see Mainster, M. A.)—665
- Whitman, R. L.** Acoustic Hologram Formation with a Frequency Shifted Reference Beam—1375
- Wiegand, C. L.** (see Allen, W. A.)—2573
- Wiesemann, W.** (see Boersch, H.)—645
- Wiggins, T. A., T. T. Saito, L. M. Peterson, and D. H. Rank.** Diffusion of Nonlinearly Scattered Light by Etched Glass—2177(L)
- Wilder, K.** (see Meyer-Arendt, J. R.)—2176(L)
- Will, D. W.** (see Harrison, A. W.)—1610
- Williams, D. T. and R. N. Hager, Jr.** The Derivative Spectrometer—1597
- Williams, M. H.** (see Marshall, G. F.)—2134
- Williams, W. J.** (see Goldman, A.)—565
- Williamson, T. L.** (see Rose, H. W.)—2394(L)
- Wilson, A. D.** Holographically Observed Torsion in a Cylindrical Shaft—2093
- Wilson, W. M.** (see Hanel, R. A.)—1767
- Winnewisser, Manfred.** Microwave Spectral Tables. Mariam S. Cord, Jean D. Petersen, Matthew S. Lojko, and Rudolph H. Haas—Book Review by Manfred Winnewisser—469(B)
- Wiswall, C. E. and K. J. Maxwell.** Optimizing Pulsed Laser Holographic Nondestructive Testing—1724(L)
- (see Reinheimer, C. J.)—2059
- Witherell, P. G. and M. E. Faulhaber.** The Silicon Solar Cell as a Photometric Detector—73
- Wittke, J. P.** Optics at RCA—2223
- Wolf, W. E.** (see Demma, F. J.)—2788(L)
- Wolfe, L.** (see Dereniak, E. L.)—2441
- Wolfe, Raymond.** 15th Annual Conference on Magnetism and Magnetic Materials, Philadelphia, 18-21 November 1969—1239(MR)
- Wolfe, W. L.** A Simple Way of Accurately Calculating Average and Mean Square Flux Densities—2578(L)

- Wood, J. I.** (see Waksberg, A. L.)—518(L)
- Wrolstad, K. H.** (see Holmes, D. A.)—2179(L)
- Wu, Wei-hau.** Calculation of Deflection Efficiency in a Phase-Modulated Acoustooptical Deflector—506(L)
- Wyant, J. C. and M. P. Givens.** Undesired Light in a Reconstructed Hologram Image Caused by the Nonlinearity of the Photographic Process—810
- Yaffee, M. A.** (see Leonard, E. T.)—1209(L)
- , **E. T. Leonard, and D. L. Weinberg.** Adjusting the Collection Angle of a Conical Lens by Immersion in a Liquid—2388(L)
- Yamawaki, K. R.** (see Ogawa, M.)—1709(L)
- Yanagi, J. T.** 2nd SPIE Seminar-in-Depth on Fiber Optics: Applications and Technology, Dallas, 28-29 January 1970 (MR)—1731(MR)
- Yates, H. W.** A General Discussion of Remote Sensing of the Atmosphere—1971
- . Aeronautics and Space Optics Technical Group—2014
- Yokozeki, S. and T. Suzuki.** Interpretation of the Moiré Method of Obtaining Contours of Equal Slope from an Interferogram—2804(L)
- Young, A. T.** Photometric Error Analysis. X: Enriched Energy (Total Illuminance) Calculations for Annular Apertures—1874
- Young, J. M.** (see Weller, C. S.)—505(L)
- Youngbluth, O., Jr.** Fatigue Effects on the Area Sensitivity, Dynode Gain, and Anode Output for Several End-on Photomultipliers—321
- Yoshino, T. and T. Sumimoto.** Polarization Properties of a Triangular Ring Laser Having a Discharge Tube with Brewster Angle Windows—1831
- Zambuto, M. and M. Lurie.** Holographic Measurement of General Forms of Motion—2066
- Zerbi, G.** EUCHEM Conference on Low Frequency Vibrational Spectroscopy, Versailles, 1-5 September 1969—1951(MR)
- Zuckerman, J. L.** (see Marathay, A. S.)—2470
- Zwirn, S. L.** SPIE Seminar-in-Depth on Space Optics, UC at Santa Barbara, 24-25 September 1969—420(MR)